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Tuberculosis Statistics for England and Wales 1938 - 1955

An Analysis of Trends and Geographical Distribution

By

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This is another in the series of occasional publications, entitled Studies on Medical and Population Subjects, the general object of which is to provide in convenient form a more extensive treatment of important subjects than is practicable within the limits of the annual Statistical Review.

During the last fifteen years mortality from tuberculosis has declined rapidly, but the reduction in notification rates has come much more slowly. A full review of the facts is therefore timely.

This Study first sets out the general situation of tuberculosis morbidity and mortality in England and Wales, and shows the trends in recent years against the background of the pre-war situation. It then goes on to survey the notification rates of respiratory tuberculosis from 1938 to 1955, and examines the geographical distribution of notifications of respiratory tuberculosis in 1954 and 1955, with regard to England and Wales as a whole and its larger administrative units.

Rates based on less than 20 deaths or notifications are distinguished by italic type as a warning to the user that the smallness of the experience may affect their significance.

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INTRODUCTION

Infection and Disease

In presenting a picture of the prevalence of tuberculosis in England and Wales today it is important to distinguish between **infection** and **disease.** In any population in which the tubercle bacillus has been freely circulating a large proportion of the adult population will have been infected before or during adolescence but there will be a relatively small proportion with active disease. In 1949-50 it was estimated that 9-14 per cent of children aged 5 in urban areas of England and Wales were tuberculin sensitive, and could therefore be assumed to have a history of infection; by age 20 this proportion had risen to 59-74 per cent (*Medical Research Council*, 1952) - recent surveys suggest that the proportions may have fallen. In contrast the proportion of the population on the registers of tuberculous cases supervised by chest clinics at the end of 1950 was only 0.65 per cent. It is clear therefore that only a small proportion of those who are infected ever show significant signs of disease. The majority of primary infections heal uneventfully without active treatment and in most cases without the infected person being aware of the infection. Statutory notifications have not been a complete measure of the prevalence of disease partly because some known cases have not been notified (*Stocks*, 1949, estimated 10 per cent under-reporting for respiratory disease) but mainly because many cases have remained undetected. This deficiency has been considerably narrowed in recent years in respect of the predominant respiratory form of the disease by the introduction of mass miniature radiography which has brought to light many unsuspected cases of active respiratory disease (at the rate of more than 3 per 1,000 of the adult population examined). In the first half of 1953 such cases found by mass miniature radiography in England and Wales amounted to 21 per cent of all notified cases of respiratory tuberculosis (*Ministry of Health*, 1954). The deficiency in notification has also been reduced by improved contact surveillance and a generally wider appreciation of the symptomatology.

Despite any deficiency it is necessary to use notifications as a measure of prevalence especially since mortality has been falling rapidly and deaths though completely recorded bear a changing ratio to the size of the tuberculous population.

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11 SEP 1957

THE GENERAL PICTURE IN ENGLAND AND WALES

Tuberculin surveys in England and Wales indicate that the general or average risk of infection in the population is small in infancy and early childhood*, but rises rapidly about school entry age, occurring at the rate of about 4 per cent per year of age, until at the age of 16 about 50 per cent and at age 21 about 70 per cent have been infected. At higher adult ages a very high proportion of the population has been infected. The precise proportion is not known. At one time it was reasonable to assume in practice that all adults had been infected earlier in their lifetime but recently some doubt has been cast upon this assumption partly by the results of small scale tuberculin surveys and partly by consideration of the consequences of the apparent downward trend in the level of infection.

The tuberculin survey of 1949-50 revealed lower levels of tuberculin sensitivity at all ages than in a survey carried out twenty years earlier (*D'Arcy Hart*, 1932) and lower than in the comparable subgroups of the Prophit Survey (*Daniels, Ridehalgh and Springett*, 1948) (see Table 1). If the trend continues a point may well be reached when infection becomes the exception rather than rule and special measures may have to be taken to detect, register, and hygienically isolate persons who are infected as distinct from those suffering from disease, to whom such measures are at present directed.

In this report, however, we are concerned with the minority in whom the original infection is not confined and healed without physical disturbance but infiltrates into surrounding tissue and causes disease. In many such cases, but not all, this disease is progressive and, if not checked by treatment, lethal. In some cases the natural resistance of the body may eventually prevail and the disease may heal without therapeutic intervention leaving only a scar behind. The proportion of infections which proceed to disease is not exactly known, knowledge being confined to statutory notification.

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*Precise data are lacking. It seems likely that the rate of infection is not flat but increases as the children begin to move about more (see Table 2).

Table I. - Tuberculin surveys 1929, 1935-44, and 1949-50

Survey and period	Population surveyed and Strength of tuberculin	Tuberculin sensitive		
		Age	Per cent	
	A.			
D'Arcy Hart 1929	Non-tuberculous controls in hospital out-patients in London. Mantoux 1;1,000 (or higher dose)	0 - 2	6.5	
		3 - 5	16	
		6 - 10	36	
		11 - 20	70	
		21 -	95	
	B.		Males	Females
Prophit Survey 1935-44	Controls healthy non-contact volunteers from offices and factories (mainly urban) (.001 mg or higher)	under 17	75.8	76.7
		16 -	62.9	79.5
		20 -	87.9	63.2
		22 -	86.3	66.9
		24	69.4	69.2
	C.			
Medical Research Council - National Survey 1949-50	Representative groups in eelected areas of England and Wales, mainly urban. (Jelly test 0.2 per cent P.P.D. + Mantoux 100 T.U.)	5 - 6	14.9	15.5
		7 - 6	21.7	20.6
		9 - 10	28.6	30.1
		11 - 12	37.5	35.4
		13 - 14	43.1	41.8
		15 - 16	53.1	49.7
		17 - 16	62.6	56.2
		19 - 20	69.6	64.5

Table 2 relates notifications to the infected population of England and Wales with the following reservations -

(i) Many cases of disease are never detected or notified - especially those which recover without disability or treatment.

(ii) Some notifications relate not to disease but to primary infection particularly where radiological or other physical changes during the process of healing provoke anxiety and the need for special surveillance - notification is in such cases a wise precaution.

(iii) The ratios shown in col.4 of the table do not measure the disease potentiality of infections occurring within the age-group since the time interval between infection and diagnosed disease may be long and span the boundaries between age-groups.

Table 2. - Notification of disease among those infected, England and Wales, 1954 (persons)

Age	Estimated per cent tuberculin positive	Tuberculosis notifications (all forms) per 1,000 population	Notifications per annum per cent of tuberculin positive
Under 1	0.5	.28	5.6
1 - 4	5.0	.53	1.1
5 - 14	30.0	.51	.17
15 - 24	70.0	1.58	.23
25 - 44	90.0	1.05	.12
45 - 64	95.0	.78	.08
65 and over	95.0	.47	.05

We may deduce from these figures that in the country as a whole the experience has been that almost all persons have been infected, and that current rates of notification are such that about one in fourteen of the population are notified at some time during life.

Notification of disease

It is difficult to speak of tuberculous morbidity since clinically this has not been conventionally defined and statistically there is no measure other than notifications and the criterion for reporting cases is not specifically related to sickness, disability, or degree of radiologically visible disease but consists either in a belief that the person is a potential infector of others and/or requires medical or social care. The Ministry of Health have issued the following note of guidance*: "Tuberculosis is required to be notified in order to check the spread of infection and to bring about the proper management of the individual case and its immediate contacts. A person who should be notified as 'suffering from tuberculosis', therefore, is a person who, because of tuberculous infection may infect others; or a person who is suffering from an active tuberculous lesion which calls for medical treatment or for some modification of the patient's normal course of living." While therefore the potential rather than actual development of disease is sometimes the basis of notification of primary infections nevertheless notifications with all their current defects do form a useful (if the only) measure of disease prevalence.

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*Ministry of Health Circular No. 33/51 dated 14th August 1951, to Local Authorities.

Notification rates by age and sex in England and Wales in 1955 are shown in Table 3 and Diagram 1. In males the rate for respiratory tuberculosis rises to a maximum at ages 15-24 and thereafter descends very slowly with advancing age (there is in fact a secondary rise in middle age, though of small dimension); while for females the incidence of notified disease is much more sharply peaked in the 15-24 age-group (above the rate for males) and thereafter descends rapidly with advancing age. For non-respiratory disease notification is notoriously incomplete though to an indeterminate degree, but taking the figures at their face value it is clear that, as might be expected from close association

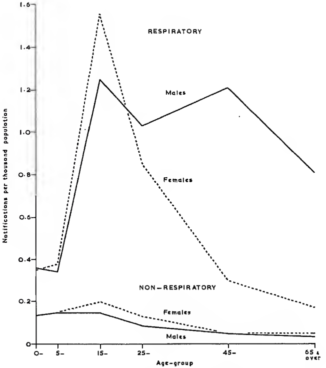

Diagram 1 - Tuberculosis: Notification rates per 1,000 population by sex and age, England and Wales, 1955.

in time with primary infection, the incidence of non-respiratory forms of the disease is highest at younger ages and declines to a very low level beyond the middle adult ages.

Mortality

Death rates by age and sex for each type of disease are shown in Table 4 and Diagram 2. For respiratory tuberculosis the shapes of these curves and the trends of the rates they represent are natural corollaries of the notification rates in Table 3, for though fatal cases are becoming rarer and the deaths are widely distributed in time, nevertheless a large proportion of the deaths occur within a few years of notification. Thus in males the slowly declining notification rates with advancing age are reflected by mortality rates rising gradually to a late peak so that mortality is sustained at a comparatively high level well beyond the middle of life and up to advanced ages. It seems clear, however, that these sustained mortality rates at advanced ages are due more to long standing disease running a slow course with intermittent healing and exacerbation than to lesions of more recent origin with no greater time interval to death than at younger ages. This is supported by the low attack rates for new disease at older ages and evidence from mass radiography that many new cases of these ages are breakdowns of old lesions regarded as inactive at earlier X-ray (*Springett* 1951), and by the fact that it is among the middle-aged and elderly that advanced lesions are common at time of notification (*Lowe* 1954). In females the mortality rates mirror to some extent the sharper peak of the notification rates at younger ages (*Springett* 1952) but there is still a tendency for the rates to remain as high in the older age-groups.

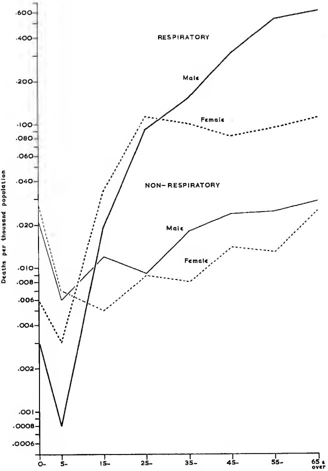

Diagram 2 - Tuberculosis: respiratory and other; death rates per 1,000 population, by sex and age, England and Wales, 1955.

Table 3. - Primary notifications of tuberculosis, England and Wales, 1955

Type of Tuberculosis	Sex	Age	Notifications per 1,000 population
Respiratory	Males	0 - 4	0.36
		5 - 14	0.34
		15 - 24	1.25
		25 - 44	1.03
		45 - 64	1.21
		65 and over	0.81
	Females	0 - 4	0.35
		5 - 14	0.38
		15 - 24	1.56
		25 - 44	0.85
		45 - 64	0.30
		65 and over	0.17
Non-respiratory	Males	0 - 4	0.13
		5 - 14	0.15
		15 - 24	0.15
		25 - 44	0.085
		45 - 64	0.051
		65 and over	0.039
	Females	0 - 4	0.13
		5 - 14	0.15
		15 - 24	0.20
		25 - 44	0.13
		45 - 64	0.050
		65 and over	0.044

Table 4. - Death rates for tuberculosis, England and Wales, 1955

Type of Tuberculosis	Sex	Age	Deaths per 1,000 population
Respiratory	Males	0 - 4	0.003
		5 - 14	0.0006
		15 - 24	0.019
		25 - 34	0.093
		35 - 44	0.151
		45 - 54	0.307
		55 - 64	0.535
		65 and over	0.614
	Females	0 - 4	0.006
		5 - 14	0.003
		15 - 24	0.034
		25 - 34	0.113
		35 - 44	0.101
		45 - 54	0.084
		55 - 64	0.095
		65 and over	0.112
Non-respiratory	Males	0 - 4	0.021
		5 - 14	0.006
		15 - 24	0.012
		25 - 34	0.0092
		35 - 44	0.016
		45 - 54	0.024
		55 - 64	0.025
		65 and over	0.029
	Females	0 - 4	0.027
		5 - 14	0.007
		15 - 24	0.005
		25 - 34	0.009
		35 - 44	0.006
		45 - 54	0.014
		55 - 64	0.013
		65 and over	0.025

Table 5. - Deaths from tuberculosis, England and Wales, 1955

Type of tuberculosis		Age		Total
		0 - 14	15 and over	
1. Respiratory system	M	7	4165	**4172**
	F	18	1647	**1665**
2. Non-respiratory system - total	M	56	305	**361**
	F	67	227	**294**
including:-				
Meninges and central nervous system	M	38	29	**67**
	F	41	24	**65**
Intestines, peritoneum and mesenteric glands	M	3	42	**45**
	F	6	35	**41**
Vertebral column	M	-	52	**52**
	F	1	34	**35**
Other bones and joints*	M	-	21	**21**
	F	-	11	**11**
Skin and subcutaneous cellular tissue	M	-	1	**1**
	F	-	3	**3**
Lymphatic system	M	1	10	**11**
	F	-	10	**10**
Genito-urinary system	M	-	87	**87**
	F	-	52	**52**
Other organs	M	1	16	**17**
	F	1	19	**20**
Disseminated tuberculosis	M	13	47	**60**
	F	18	39	**57**

*Includes late effects of tuberculosis of bones and joints - Males 6, Females 2, at ages 15 and over.

In considering mortality from non-respiratory tuberculosis it has to be borne in mind that disease which terminates fatally may do so in a form which differs from that in which it originated. A number of cases notified as non-respiratory may later develop chronic pulmonary tuberculosis and may ultimately die from that disease. Others notified with local lymphatic or skeletal lesions may suffer miliary extension of disease and may die as a result of lung or meningeal involvement. In general the death risk from non-respiratory tuberculosis is maximal in the early years of childhood (more detailed figures show that the highest death rate is in the second year of life); it is relatively insignificant in adult life compared with mortality from respiratory tuberculosis. The most fatal of these forms of disease is tuberculosis of the meninges and central nervous system which accounts for 20 per cent of all non-respiratory tuberculosis deaths and 64 per cent of those under age 15 (see Table 5).

Recent trends

(i) Respiratory tuberculosis – morbidity

Table 6 and Diagram 3 show the notification rates by age and sex for tuberculosis of the respiratory system. The intervention of mass radiography, improved chest clinic facilities and a more co-operative public attitude has so improved the efficiency of case-finding that the rates for the years following the 1939–45 war are not comparable with those of earlier years. It is indeed doubtful whether, as the rates might at their face value suggest, the incidence of new cases of the disease was higher in 1952 and 1953 than in 1938; it is more certain that the downward tendency of rates at most ages in recent years is real.

There have been sex and age differentials in the trend. At ages under 15 notification rates are much higher than formerly as a result of wider recognition of the clinical reactions to primary tuberculosis infection and an increased tendency to notify such cases. Some of these cases represent dissemination of the bacilli through the blood stream with lung involvement, often with fatal consequences, but the majority of these primary complexes heal uneventfully without active treatment; they are rarely comparable with the cases of pulmonary tuberculosis of adolescent and adult life which are represented by the notifications in older age-groups.

Table 6. - Tuberculosis of respiratory system: Notification rates per 100,000 population, by sex and age, England and Wales, 1938 to 1955

	All Ages	0-	5-	15-	25-	35-	45-	65 and over
Males								
1938	**108**	20	42	141	137	136	136	52
1939	**98**	17	32	132	124	124	125	48
1940	**104**	17	29	145	146	128	123	43
1941	**115**	20	33	154	155	148	141	50
1942	**117**	22	38	165	148	153	142	49
1943	**119**	27	40	166	144	154	152	50
1944	**122**	30	41	160	158	142	149	56
1945	**118**	32	40	178	160	135	142	53
1946	**119**	32	48	179	174	125	138	54
1947	**118**	40	53	193	163	116	137	58
1948	**117**	44	51	215	161	117	139	64
1949	**119**	46	49	180	159	122	146	86
1950	**111**	53	49	159	154	107	135	67
1951	**115**	53	48	170	156	117	141	72
1952	**112**	52	51	165	147	116	135	77
1953	**110**	49	49	155	133	114	139	65
1954	**100**	41	40	143	125	106	128	82
1955	**92**	36	34	125	110	98	121	81
Females								
1938	**77**	18	42	175	129	72	42	19
1939	**71**	15	33	188	116	68	37	18
1940	**70**	17	30	168	120	68	35	16
1941	**76**	19	33	185	126	69	41	19
1942	**78**	20	34	204	130	70	37	18
1943	**83**	26	40	209	142	73	40	18
1944	**86**	26	40	227	150	75	38	18
1945	**81**	26	41	223	140	89	34	18
1946	**80**	28	49	213	141	65	35	16
1947	**83**	33	51	235	148	66	35	17
1948	**86**	48	58	244	151	68	35	17
1949	**85**	44	53	238	155	71	35	17
1950	**82**	43	52	238	152	69	31	16
1951	**81**	50	52	229	149	68	33	18
1952	**80**	49	53	216	148	71	35	16
1953	**77**	45	52	201	141	73	34	18
1954	**68**	37	44	187	124	63	30	17
1955	**60**	35	38	156	112	59	30	17

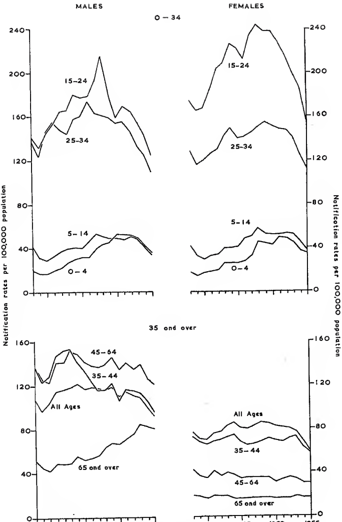

Diagram 3 - Tuberculosis of respiratory system: Notification rates per 100,000 population, by sex and age, England and Wales, 1938 to 1955.

The young adult is most vulnerable to pulmonary tuberculosis and the notification rate at ages 15-24 has been and probably still is a sensitive index of the contemporary balance of forces of infection and resistance in the community. During the war years the notification rates for both sexes in this age-group rose, partly as a reflection of adverse war conditions, and partly also as a result of improved case-finding and it is not possible to separate the contributions of these factors. In males there has been some considerable improvement from the peak of 1948 when the rate was 52 per cent above the 1938 figure, and in 1955, making allowance for better detection, it seems likely that the morbidity in this age-group has fallen well below the pre-war level. For females the rate reached a maximum in 1948 at a figure 39 per cent above that for 1938 and unlike that for males did not immediately decline; but the 1955 rate represents only a slightly smaller recovery than in males. This retarded decline is not surprising since it has always been recognized that young women, in whom the disease usually takes a more fulminating course (*Springett* 1952), are even more susceptible than young men to those upward fluctuations in tuberculosis morbidity that accompany social disturbances. At ages 25-34 the general picture is much the same as at 15-24, viz. a downward trend for men with recovery of ground lost by the war, and slightly less improvement for women.

In women there has been only a very recent tendency for rates of notification at ages above 35 to decline; the rates are already relatively low in these age-groups, for most women who contract tuberculosis do so before the age of 35. In men there had been until 1954 no marked trend at ages 35-64; the rates had fluctuated but had remained about the same level; in 1954 however a downward movement began. At ages 65 and over notifications have been considerably higher since 1948 than for many years. A factor to be borne in mind is the increased attention now paid to radiological investigation of the chest in middle-aged and older men, partly a natural accompaniment of expanding facilities but partly also the effect of preoccupation with the problem of cancer of the lung.

The significant and hopeful feature is that successive generations are now incurring a progressively diminishing risk of disease and as they in turn have a smaller liability to infect others there is a very real progressive downward trend in the prevalence of tuberculosis. Though it seems likely to be many years, perhaps decades, before a virtually tuberculosis-free generation emerges, the prospects are sufficiently encouraging to call for redoubled efforts on the part of all forces ranged on the side of prevention.

(ii) Respiratory tuberculosis - mortality

Death rates from respiratory tuberculosis by sex and age are shown in Table 7. The main feature of this table is the very rapid decline after 1947 in mortality from respiratory tuberculosis especially at young and middle ages. The trends are shown diagrammatically in Diagram 4. In both men and women the rate at ages 20-24 in 1954 was only one sixteenth of that in 1947; and at ages 45-54 the 1955 rates were for both men and women less than one third of those of 1947. Undoubtedly chemotherapy, with streptomycin, PAS, and isoniazid making the principal contribution, and, as a further benefit of antibiotics, safer and therefore bolder chest surgery have combined together with many other advances in the management of tuberculosis patients to produce this rapid decline.

It may appear that the older ages do not share this favourable trend. At ages over 75 for both sexes there has been up to about 1951 a tendency for death rates to rise. It is not clear whether this increase in mortality is wholly real or whether it is in part due to more accurate certification as a result of more extensive radiology, better methods of bacillary investigation and increased post-mortem discovery of long standing lesions or postponement of deaths from earlier ages.

The trend in mortality is more easily understood if it is borne in mind that each succeeding generation has fared better in combating the disease. This feature has been extensively analysed on a cohort basis by *Frost* (1939) *Springett* (1950) *Daw* (1950) and *Spicer*. (1954). Generally the results may be summarised by saying that though for men the secular trend is for the peak in mortality to move steadily to later ages and become diminished, this is due to succeeding generations having lower mortality so that the residual (at late ages) of the high mortality of an early cohort is greater than the early adult peak of the present generation. Much of the mortality at late adult ages is undoubtedly due to the breakdown of old lesions (*Springett* 1951) and the early adult peak does in fact more truthfully reflect the natural history of the disease. Indeed this underlies not only the relative constancy of the cohort pattern but explains some of the deviations from the simple picture to which *Spicer. (loc.cit)* has drawn attention.

Table 7. – Tuberculosis of respiratory system: Death rates per million population by sex and age. England and Wales, 1931–45 and 1946 to 1955

	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75 and over
Males											
1931–35	85	42	84	490	963	961	1,140	1,368	1,176	723	275
1936–40	61	20	44	366	742	785	937	1,210	1,216	718	296
1941–45	78	24	34	339	581	874	811	1,114	1,203	741	295
1946	68	22	23	239	481	615	687	1,020	1,165	788	340
1947	77	15	29	241	500	832	679	1,034	1,213	812	267
1948	56	10	14	211	445	603	633	961	1,188	881	334
1949	34	7	14	127	366	497	592	869	1,159	937	400
1950	38	9	8	78	229	395	428	751	1,024	891	411
1951	30	7	7	48	171	292	384	836	978	953	464
1952	15	4	10	35	102	201	287	503	829	843	447
1953	14	4	3	18	71	156	214	413	712	814	445
1954	9	2	1	13	55	130	192	370	843	778	406
1955	3	1	1	8	30	93	151	307	535	705	420
Females											
1931–35	74	43	143	840	1,138	911	846	475	394	308	170
1936–40	55	24	98	658	1,018	759	511	377	339	272	180
1941–45	72	24	76	591	916	692	427	304	289	220	123
1946	60	25	89	468	842	862	382	261	242	207	119
1947	70	24	83	502	899	730	411	267	249	224	133
1948	52	19	53	462	812	702	367	255	235	218	105
1949	33	10	30	351	682	622	348	254	249	236	139
1950	29	8	15	199	429	444	273	229	212	212	144
1951	25	8	14	108	278	347	238	192	180	198	135
1952	18	5	6	58	169	230	166	131	148	150	159
1953	17	5	3	32	122	174	146	116	130	182	140
1954	11	2	3	31	84	143	145	104	107	137	117
1955	6	2	4	12	56	113	101	84	95	111	115

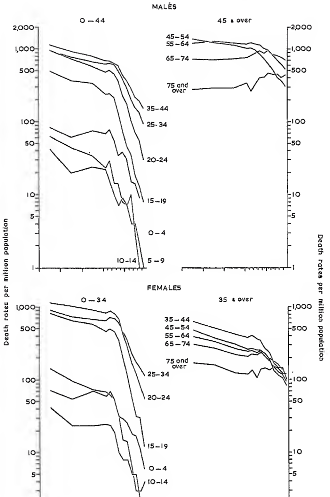

Diagram 4 - Tuberculosis of respiratory system: Death rates per million population, by sex and age, England and Wales, 1931 - 1955.

(iii) Non-respiratory tuberculosis – morbidity

Table 8 shows notification rates per million living by sex and age for non-respiratory disease in recent years. There has been a persistent decline in notification at all ages and, in the short period since 1938, the rates (for all ages combined) have been reduced by 67 per cent for males and 59 per cent for females. The absolute incidence of non-respiratory tuberculosis is not accurately measured by the notification rate as it is known that notification is seriously defective, though to an indeterminate degree, and the proportion of total cases notified may vary in different parts of the country and in different age-groups. Nevertheless the broad downward trend is not in doubt.

Table 9 gives death rates for non-respiratory tuberculosis, by age and sex, and separates tuberculosis of the meninges and central nervous system from other non-respiratory tuberculosis. Tuberculous meningitis is commonly a direct manifestation of primary infection and occurs mainly in very young children. Before the advent of streptomycin it was invariably fatal (and for this reason it was often considered superfluous to notify the disease). As this condition is so closely linked to primary infection, now usually with human rather than bovine bacillus, its prevalence has often been considered to be a sensitive measure of the volume of the reservoir of infection in the community and the wartime rise in mortality in 1941-45, compared with a fall in the mortality from other forms of non-respiratory tuberculosis, is significant. The sharp fall after 1948 however does not indicate a fall in total tuberculosis morbidity and infectiousness but reflects the introduction of streptomycin and the end of the era of inevitable death from tuberculous meningitis. The death rates for both sexes in 1955 were only about one fifteenth of the pre-war figures. The decline in mortality from other forms of non-respiratory tuberculosis which had already become steeper toward the end of the war of 1939-45 was given further impetus after 1948 partly by streptomycin and partly by generally improved control over tuberculous infection (including the improved care of milk) as the difficulties of the war years were left behind.

Summary

The general picture in England and Wales in the last 15 or so years is thus of rapidly declining mortality, but of much slower reduction in notification rates. Improved case-finding has resulted in earlier notification than formerly and on the whole cases currently notified represent less infectious forms of the disease than ten years or so ago. The proportion of newly notified cases of tuberculosis (all forms) from which bacilli had been

Table 8. – Non-respiratory tuberculosis: Notification rates per million population by sex and age, England and Wales, 1938 to 1955

	Males					Females				
	All ages	0–	15–	25–	45 and over	All ages	0–	15–	25–	45 and over
1938–40	**290**	744	341	151	72	**264**	641	403	172	61
1941–45	**269**	698	326	148	64	**261**	632	413	178	63
1946	**217**	569	250	123	53	**210**	518	334	149	47
1947	**202**	518	227	114	54	**196**	455	317	144	51
1948	**197**	505	243	99	53	**199**	473	333	138	46
1949	**171**	423	211	93	50	**174**	399	304	127	40
1950	**151**	350	186	93	48	**164**	343	288	139	39
1951	**149**	327	196	98	48	**159**	314	300	131	46
1952	**135**	275	196	91	50	**146**	272	242	135	54
1953	**122**	233	183	65	59	**133**	224	240	129	51
1954	**109**	192	149	93	48	**133**	199	245	140	56
1955	**96**	145	154	85	48	**109**	144	203	128	48

Table 9. - Tuberculosis of meninges and central nervous system, and other non-respiratory tuberculosis: Death rates per million population by sex and age, England and Wales, 1938-40, 1941-45 and 1946 to 1955

	Males							Females						
	All ages	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over
	Tuberculosis of meninges and central nervous system													
1938-40	**45**	289	73	41	14	6	*2*	**40**	273	77	48	11	4	*2*
1941-45	**50**	308	87	51	15	6	*1*	**45**	282	90	65	14	4	*1*
1946	**40**	222	80	42	11	7	*3*	**36**	199	82	52	12	*3*	*0*
1947	**39**	215	68	39	12	8	*1*	**34**	184	86	52	11	4	*1*
1948	**31**	179	47	30	9	7	*3*	**30**	188	54	44	10	*3*	*2*
1949	**27**	153	40	26	8	5	*4*	**24**	128	40	33	10	4	*1*
1950	**20**	103	32	20	7	7	*3*	**20**	118	31	31	6	4	*2*
1951	**21**	109	30	19	9	5	*3*	**19**	102	34	30	6	*3*	*1*
1952	**13**	87	15	13	6	4	*1*	**11**	57	18	16	5	*2*	*1*
1953	**8**	46	9	10	4	*3*	0	**7**	48	10	9	*3*	*2*	*0*
1954	**5**	22	*5*	*4*	3	*2*	-	**4**	18	*5*	8	*2*	*2*	*1*
1955	**3**	14	*4*	*3*	*1*	*2*	*1*	**3**	17	*4*	*2*	*1*	*1*	*0*
	Other non-respiratory tuberculosis													
1938-40	**69**	148	42	86	81	83	80	**53**	114	35	72	48	40	50
1941-45	**63**	134	40	77	57	58	52	**50**	101	35	72	45	37	50
1946	**48**	87	24	51	48	50	44	**39**	64	25	53	38	30	40
1947	**46**	92	29	46	41	48	43	**39**	85	27	57	37	34	29
1948	**40**	57	20	41	37	49	40	**33**	56	18	39	31	28	38
1949	**34**	34	15	38	32	42	41	**24**	33	8	28	24	28	25
1950	**26**	24	10	25	27	31	41	**20**	20	7	22	18	23	30
1951	**23**	17	*5*	19	25	30	37	**18**	15	*5*	14	13	25	34
1952	**20**	19	*3*	14	18	29	44	**14**	*10*	*4*	9	11	17	30
1953	**16**	12	*5*	7	14	26	31	**13**	18	*2*	9	9	18	28
1954	**17**	13	*2*	11	14	24	39	**12**	*4*	*4*	7	10	18	28
1955	**14**	*8*	*1*	9	13	23	27	**10**	*11*	*3*	*3*	7	13	24

recovered had fallen from about 60 per cent in 1938 (estimated) to 41 per cent in 1955. Nevertheless there were at the end of 1955 in England and Wales 342,866 cases on the chest clinic registers and nominally under surveillance; of these 19,323 were known to have had tubercle bacilli in the sputum in the preceding six months (*Ministry of Health* 1956), i.e. they could be presumed to be infectious. The problem of control of infection is still a serious one.

SOCIAL FACTORS

Conditions either favouring the transmission of the infecting organism or reducing the host resistance must lead to increased prevalence of disease. On the one hand overcrowded housing conditions or failure to isolate infectious cases from home or industrial contacts and on the other hand malnutrition, fatigue and side effects of poor social conditions foster the disease. It has to be stressed therefore that the risk of infection from unsuspected or poorly supervised cases of tuberculosis either within their own families or among workmates is high and represents an especially difficult problem owing to the often silent character of primary infection and the effectively long period of "incubation" before symptoms of disease appear. The precise role of overcrowding in this connection is not clear since it is difficult to separate housing conditions from the whole complex of social conditions (*Benjamin* 1953) and it is probable that any correlation of morbidity with housing density within social class is merely a reflection of the fact that these classes are not homogeneous and that within them there are different levels of living which are differentiated, inter alia, by housing conditions. It is difficult also to measure the individual effects of nutrition, occupation, local amenities or medical services and other environmental elements though many attempts have been made [*Collis and Greenwood* (1921), *D'Arcy Hart and Payling Wright* (1939), *Stein* (1952), *Benjamin* (1953)], but it is clear that the disease thrives more strongly and persistently among the poorer members of the community and, since by incapacitating the wage earner tuberculosis may worsen living conditions, a vicious circle may be created. Tuberculosis is in this sense a social disease of primary importance.

The following statistics from occupational mortality analyses illustrate the social gradient in mortality. The rise in passing from Social Class I to Social Class V is steep. The figures are taken from the Registrar General's Decennial Supplements (General Register Office, 1927, 1938, 1954(1)).

Standardised Mortality Ratios by Social Class; Males 20-64

(all males = 100)

Based on Deaths of	Social Class				
	I	II	III	IV	V
1. 1921-23	49	81	95	97	137
2. 1930-32	61	70	100	104	125
3. 1950	64	62	103	95	149

N.B. For (1) and (2) the populations at risk were the populations enumerated in the censuses of 1921 and 1931 in England and Wales. For (3) the numbers at risk were taken from the *Census 1951, Great Britain, One Per Cent Sample Tables* *

The Social Classes are:

I Professional and Managerial occupations

III Skilled operatives

V Unskilled operatives

II and IV being intermediate

(For fuller details see *Census 1951, Classification of Occupations* †)

Some mention must be made, in this short review, of special occupational risks though again it is difficult to separate these from general environmental influences. The occupational mortality studies surrounding the 1931 Census (*General Register Office*, 1938) indicated that the ten occupations with the highest mortality from respiratory tuberculosis among males were:-

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* Census 1951, Great Britain, One Per Cent Sample Tables, Part I. H.M.S.O. price 17s. 6d. net.

† Census 1951, Classification of Occupations. H.M.S.O. price £1. 10s. net.

Occupation	Standard Mortality Ratio at ages 20-64*
Grinders, metal	275
Potters, waremakers, casters, finishers	233
Glazers, polishers, moppers	230
Barmen	212
Costermongers, Newspaper sellers	200
Boot, shoe workers - factory operatives	188
Water Transport - Dock Labourers	186
Masons; Stone Cutters, Dressers	179
Waiters	178
Hairdressers, etc.	162

* In brief this represents the actual deaths in 1930-32 as a percentage of those expected if the average tuberculosis mortality rates for England and Wales, age by age, had been experienced by the occupational group, i.e. S.M.R. all males = 100.

Greenwood and Thompson (*Collis and Greenwood* 1921) had, many years earlier, stressed the powerful influence of the conditions of factory employment in general in facilitating the spread of disease. Later Collis (1925), in referring to the high mortality from respiratory tuberculosis in printers and shoemakers despite low general mortality, stressed that in both occupations the men "worked indoors under circumstances in which individuals are so aggregated together as to facilitate the passage of infection from person to person".

An investigation of sickness in the cotton spinning, cotton weaving and printing industries (*Bradford Hill*, 1927, 1929 and 1930) though obstructed by lack of data served to underline the high incidence of tuberculosis in the printing industry.

Differentiation has to be made between the true occupational risks represented by dust damage to lungs (grinders, potters, glazers, stone cutters) or cross infection (printers, shoemakers) and the apparent occupational risks which actually arise from the poor standard living of low paid jobs (barmen, costermongers, waiters) where recruitment may also be from persons of poor physique.

Cairns and Stewart (1951) have discussed the different phasing of the rise and fall of tuberculosis mortality in printers and shoemakers, regarding each industry as partially closed communities, and have suggested that the tuberculosis mortality trends for printers and shoemakers during the fifty years of records represent respectively the declining and ascending phases of two slow motion epidemics such as might occur in the industrialisation of trades where the work is light enough to permit the presence of chronic carriers. Evidence of such chronic carriers had been found in a photofluorographic survey of the Northampton boot and shoe industry (*Stewart and Hughes*, 1949 and 1951) as also had evidence of selective recruitment of workers of poor physique, and of high risks of airborne spread of infection in the factories.

The classical example of cross infection risk may be found in the high rate of infection at one time affecting nurses tending general hospital patients; such patients though not under treatment for tuberculosis form a sick community among whom chronic carriers are likely to be more frequent than in the population at large (*Daniels, Ridehalgh, Springett,* 1948).

Invalidity

In the pre-chemotherapy era the average period between notification and death in England and Wales was about 2.2 years (derived from *Stocks and Faning* 1944) and these deaths were dispersed over a much longer period. Those who died within a few years of notification may be regarded as a selection of those who were from the outset failing to arrest the progress of the disease and they were probably incapacitated for much of their period of survival. When account is taken of those with more favourable response to treatment much longer periods of survival are involved. In the pre-war period 1937-39 (loc. cit) 51 per cent of all respiratory cases were alive 10 years after notification. In a study of a large body of patients treated by collapse therapy for respiratory tuberculosis between 1937 and 1942 the proportion surviving eight years even among severely cavitated cases was 50 per cent. (*Foster Carter* et al 1952).

A more recent study in London (*Caplin, Griffiths and Silver* 1956) showed that for a normal cross-section of chest clinic cases notified in 1949 and treated by chemotherapy or surgery (as indicated), the proportion surviving five years was 83.4 per cent but as a reminder of the need for early diagnosis it was reported that of advanced cases in elderly men 50 per cent died in three years even with early chemotherapy.

As to the period of incapacitation the records of National Insurance (unpublished data) indicate that the median length of spells of sickness claim due to respiratory tuberculosis terminating in 1953-54 was for males 352 days and for females 455 days. For those who undergo institutional treatment the average duration of such treatment is about six months (*General Register Office,* 1954$^{(11)}$). Even though results of treatment are infinitely better than a few years ago it is clear that tuberculosis, especially respiratory tuberculosis, prevents the sufferer from carrying on a normal life for a period of a year or so in most cases, and in some cases for years.

The total loss to national productivity is thus considerable. Every year at present in Great Britain 26 million pereon-days are lost to industry as a result of tuberculosis in respect of those covered by sickness insurance apart from the loss in respect of non-insured persons. (Unpublished data.) It is worth stressing that the majority of new cases in adult life occur at comparatively early ages and that though most recover there may be impairment of function and lack of ability to return to occupations as vigorous as those adopted prior to illness.

ADMINISTRATIVE MEASURES

The problem has been approached administratively in two ways:-

1. In the community - identification of infectious cases and prevention of spread by reducing infectivity (treatment and/or isolation)
2. In the individual - diagnosis and treatment to sterilise disease and to restore function.

Ideally these are one and the same problem; but in practice it cannot be assumed that to treat the known sufferer is automatically to limit the spread of diseae to others. Infectious cases are not always aware that they are suffering, and a proportion of cases may not even with the best modern treatment be rendered non-infective. Falling mortality accentuates the problem by prolonging the years during which an infectious case can spread disease. In recent years, however, greater emphasis has been placed upon the first part of the dual problem.

Notification of tuberculosis to the local Medical Officer of Health is accepted as an essential measure of control, as it is of other infectious diseases. In England and Wales, attention was first directed to the spread of infection among the destitute and vagrant population and in 1908 regulations were made compelling Poor Law hospital medical officers to notify pulmonary tuberculosis found among cases under their care. In 1911 notification was extended to cases of pulmonary tuberculosis in public hospitals (i.e. not entirely supported by patients' contributions). From 1st January, 1912, all cases of tuberculosis coming to the notice of a medical practitioner became compulsorily notifiable.

As the counterpart of notification and to provide for treatment and supervision the local tuberculosis clinics were essential. Sir Robert Philip had established the first dispensary in Edinburgh in 1887, but no tuberculosis dispensary was established in England and Wales until a clinic was opened (under the aegis of a charity) in Paddington in 1909. By 1911 there were 50 voluntary dispensaries and 14 provided by sanitary authorities. In 1911 the National Health Insurance Act set the pattern of the future service by providing financial aid from the Exchequer to local treatment arrangements (for the insured population). Widespread establishment of local clinics followed later after the Departmental Committee on Tuberculosis had reported in 1912 that local authorities should be made responsible for providing diagnostic, treatment, and control facilities for the whole population, not only the insured. The former tuberculosis dispensaries (a title, which reflected the limited aid they could provide) are now known as the Chest Clinics; the more embracing title indicating an expansion of diagnostic examination beyond the narrower field of tuberculosis to other lung diseases and a desire to keep physicians and patients within the full fold of general medicine. In practice although only a proportion of the cases coming to a clinic for examination are suffering from tuberculosis the majority of cases **retained** on the clinic register are tuberculous.

Procedure: 1930 to 1952

Intermediate steps in the development of the tuberculosis services would make an interesting study but it is proposed here only to describe the arrangements as they existed after the consolidating Tuberculosis Regulations of 1930 and until new regulations were approved in 1952. These were:-

1. Diagnosis - Sometimes made by the general practitioner, but more commonly made, finally, by the Tuberculosis Officer of the local clinic or by the hospital chest department after referral by the general practitioner and after radiological and bacteriological examination.
2. Notification - Upon diagnosis (within 48 hours) the Tuberculosis Officer (or other medical practitioner making the diagnosis) reported the case to the County or County Borough Medical Officer of Health. The Tuberculosis Officer was employed by, and his clinic was organised by, the County or County Borough Public Health Department. The report stated name, age, sex, address, occupation and site of the tuberculous lesion. A notification fee of 2s.6d. was paid to every general practitioner and 1s.0d. to medical officers of institutions. The Medical Officer of Health was required to keep a Register of Notifications and to maintain it by adding newly notified cases and removing cases known to have left the area or have died or cases later certified by the Tuberculosis Officer to be no longer in need of supervision. In addition the case records of the local

dispensary (clinic) formed a register of cases under surveillance. In order to keep a check on the completeness of notification hospitals and sanatoria had to report all their admissions and discharges to the Medical Officers of Health of the areas of residence of the patients.

3. Treatment - County and County Borough Health Departments were empowered (and financially aided by the Government) to provide free institutional treatment for those for whom it was recommended and domiciliary treatment for other cases was largely left to the general practitioner subject to liaison with the Tuberculosis Officer either by the attendance of the patient at the clinic or by written report from the general practitioner. The services were comprehensive and embraced voluntary social services by care committees. This service was broken up by the National Health Service Act of 1946 which transferred Hospitals from the public health departments of local authorities and private ownership and placed them under Regional Boards (or Boards of Governors for Teaching Groups) and also made the Tuberculosis Officer an officer part-time of the Regional Hospital Board.

4. Follow-up - After hospital or sanatorium treatment or in the absence of such treatment the tuberculosis patient was encouraged to attend the local clinic. An endeavour was also made to get all contacts of the patient examined and kept under necessary supervision. (The importance of this work has been strikingly illustrated by *Aspin* (1952)).

Introduction of New Regulations in 1952

New regulations in 1952 simplified the arrangements by abolishing the need for reporting hospital movements and bringing the facilities into line with the conditions of generalised free medical care under the National Health Service which made it unnecessary to make a special provision for tuberculosis. Notification registers of Health Departments, seldom accurate, were no longer compulsory and more reliance was placed upon records available at the chest clinics. Though notifications still remain the principal measure of morbidity the lack of specificity in reporting the character of disease renders it impossible to formulate a full picture of the pattern of disease prevalence. Notification statistics are published in the Weekly and Quarterly Return and the Annual Statistical Review of the Registrar General.

The known infector pool - respiratory tuberculosis

At the end of 1955 there were 307,182 notified cases of respiratory tuberculosis on the clinic registers in England and Wales, of whom 19,323 were known to have had tubercle bacilli in the sputum in the preceding six months. The corresponding figure for 1953 was 283,601. Two years earlier the register amounted to 250,889. The pool appears at present to be increasing at the rate of about 11,000 a year. The average annual number of notifications of respiratory tuberculosis over the same period in 1951-55 was 39,000 and the average number of deaths 8,400 so that recoveries may be estimated as follows:-

Notifications	39,000
Net gain to pool	11,000
Total losses	28,000
Deaths	8,400
Recoveries	19,600

Deaths have been declining rapidly in recent years and may be expected to continue to decline. Whether or not this will be matched by increased recoveries is a matter of some concern. The numbers of patients on the clinic registers who have had a positive sputum in the previous six months have been in recent years -

	31st December
1949	26,752
1950	27,139
1951	25,477
1952	25,947
1953	24,055
1954	21,655
1955	19,323

Up to 1953 the movement of these figures was very small but the decline is now quickening in pace.

The unknown infector pool

Apart from known cases there are, if mass radiography experience is representative of the whole population, about 75,000 unsuspected cases of respiratory tuberculosis in the community at any one time. This unknown pool is continually being fed by new lesions (probably 50,000 cases a year*) reduced by (i) transfers to the known pool as a result of discovery and notification (35,000); (ii) healing without discovery (20,000†); (iii) death prior to notification (1,500‡). The net annual reduction is only of the order of a few thousand.

Summary

The picture so far as respiratory tuberculosis is concerned is of a tuberculous population (known and unknown) of the order of 375,000 persons of whom perhaps 45,000 are sputum positive and therefore infectious. While it seems likely that improvements in case-finding have reduced the period between onset and detection of disease (*Lowe* and *Geddes* 1953) the total **known** tuberculous population is apparently still increasing though there is evidence of a quickening reduction in the number of infectious cases.

In this picture we have left out of account other sources of spread of infection, notably milk-borne bovine tuberculosis which though much reduced by improved dairy hygiene (including pasteurisation) still makes a contribution to the development of non-respiratory tuberculosis. Non-respiratory disease (not all of bovine origin) adds 36,000 to the current tuberculous population.

These statistics indicate that the problem of control of tuberculous infection is still a large one and any complacency as a result of the dramatic decline in mortality and the progressive reduction in notification is not justified. The known infector pool is still large; the emptying of the unknown into the known infector pool could be more rapid.

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*Based on attack rate recorded by *Springett* (1951).

†Based on the age gradient in the incidence of inactive post-primary lesion found in mass radiography.

‡Based on recent numbers of posthumous notifications, this probably understates the prevalence of tuberculous disease, undetected prior to death.

Note: Pages 1-29 are based on part of a thesis for the degree of Ph.D. of London University awarded to B. Benjamin in 1954.

NOTIFICATION RATES OF RESPIRATORY TUBERCULOSIS, 1938 to 1955

The annual trend of notification rates from 1938 to 1955 is given in Table 10 for England and Wales as a whole, for the individual metropolitan boroughs of the County of London, for each of the county boroughs throughout the country, and for each administrative county.

As it would be impracticable to comment upon the trends in all the separate administrative areas listed in the table comment must be confined to the trend in the country as a whole and in the aggregated metropolitan boroughs, county boroughs, and administrative counties, but attention will be drawn to any individual areas that appear to show important departures from the general trend. In many of the less populated areas fluctuations in the figures occur from time to time that are probably fortuitous and to which no special significance should be attached.

Tuberculosis of respiratory system: Mean annual notification rates per 100,000 population by sex and age, England and Wales 1938-39, 1947-50 and 1954-55

Period	Males					Females					Persons
	0-	15-	25-	45-	65 and over	0-	15-	25-	45-	85 and over	All ages
1938-39	31	136	130	131	49	31	169	98	40	19	**88**
1947-50	49	178	137	139	64	49	238	109	34	17	**100**
1954-55	38	134	109	123	82	39	171	90	30	17	**80**

Trend in England and Wales

For both sexes combined the rate in 1939 (84 per 100,000) was lower than in 1938 (92 per 100,000). Thereafter an annual rise took place reaching a peak of 103 per 100,000 in 1944. Practically no reduction occurred during the next five years and in 1949 the rate was still 102 per 100,000. Somewhat lower rates were recorded between 1950 and 1953, with a suggestion of a progressive decline beginning. This decline became more evident in 1954 when the rate fell to 84 per 100,000, the same as in 1939, and was succeeded by a further fall in 1955 to 76 per 100,000. This was the lowest national rate so far recorded, and was 90 per cent of the rate in 1939.

The broad picture is illustrated by the above summary table for the periods 1938-39, 1947-50 and 1954-55.

Trend in the Metropolitan Boroughs

As in the country as a whole, there was a small decline in the London Administrative County between 1938 (128 per 100,000) and 1939 (123 per 100,000) followed by a moderate rise in 1940. This was succeeded by a large increase in 1941, to 183 per 100,000 and this level of notification was maintained during the next three years up to 1944. Rates ran at a somewhat lower level between 1945 (168 per 100,000) and 1949 (166 per 100,000). Some further reduction took place during the years 1950 to 1953 (140 per 100,000), followed by a larger reduction both in 1954 (127 per 100,000) and 1955 (114 per 100,000). Compared with the national trend the increase in notifications in 1941 was much more abrupt and of much greater relative magnitude. Whereas the national rate in its peak wartime year, 1944, was 23 per cent higher than in 1939, the rate in London by 1941 had risen to 49 per cent above that of 1939. The decline occurring in 1954 and 1955 was similar in London to the country as a whole, the rate in 1955 being 93 per cent of that of 1939.

Amongst individual metropolitan boroughs attention may be drawn to the very large wartime increases (over 100 per cent) in notifications in **Bermondsey**, **Finsbury**, **Hampstead** and **Shoreditch**, and increases to about the same degree in **Bethnal Green**, **Poplar**, **Stepney** and **Stoke Newington**. In **Camberwell** higher rates were recorded in 1948, 1949, and 1952 than in any of the war years, and rates in 1953-55 were considerably higher than in 1938-39. **Deptford** recorded higher rates during 1949-51 than at the height of its wartime prevalence, and there has been no reduction in rates during 1954-55, the rates in these two last years being very much higher than in 1938-39. In contrast the rate in **Hackney** in 1955 (66 per 100,000) was down to 61 per cent of the rate in 1939. In **Paddington** where high rates persisted from 1941 right up to 1953, an abrupt improvement took place in 1954 and 1955 bringing the rates back to their 1938-39 level.

Trend in the County Boroughs

The County Boroughs vary in size between Canterbury (population 30,000) and Birmingham (population 1,112,000). Taken together they comprise practically all of the towns outside the Greater London area, though including some in that area, with a population over 100,000 and the majority of towns outside the Greater London area with a population between 50,000 and 100,000. The notification rates for the aggregated county boroughs can be taken therefore as representative of the average trend in the larger towns of England and Wales. The total population living in the county boroughs in 1955 was about 14,000,000.

The notification rate in 1939 (99 per 100,000) was lower than in 1938 (110 per 100,000). There was a small increase each year up to a maximum of 123 per 100,000 in 1943, followed by a period of steady and slightly lower rates during 1944-49. A lower level was again achieved during 1950-53, and this was followed by a decline to 99 in 1954, the same as in 1939, and to 92 in 1955, the lowest rate so far recorded. The trend in the aggregated county boroughs has therefore been broadly the same as for the country as a whole.

In **Birmingham** there was a relatively small and gradual wartime rise in the notification rates, reaching their maximum in 1944 and 1945, but still higher rates were recorded in 1947, 1952 and 1953. The rates in 1954 and 1955 had not returned to the 1938-39 level and were, in contrast to pre-war experience, above the England and Wales rates. Between 1938 and 1948 **Bradford** had an almost level series of rates well below that for England and Wales, but from 1949 the rate has approximated more closely to the national level. After a sharp rise in 1942 the rate in **Bootle**, where tuberculosis mortality has been high, has been, in most years, more than twice as great as in England and Wales; but in 1955 the excess was much reduced, to 50 per cent. In **Coventry**, too, rates were high from 1949 onwards with no improvement in 1954 and 1955 when the rates were more than 60 per cent above the national level. In **Gateshead** the rate in most years has been more than twice the national figure despite a sudden decline in 1954 and a further fall in 1955. The average rate in **Great Yarmouth** in 1953-55 was just under half that in 1938-40. In **Leeds** rates were elevated during the war years but since 1946 they have remained fairly steady though with a slight tendency gradually to come down. The notification rate in **Liverpool**, an area of above average tuberculosis mortality, remained practically constant from 1943 to 1952 at about twice the national level, and though the rate hae since improved considerably this proportional excess remains. In **Manchester**, where mortality has also been high, some reduction occurred in 1950 and further reduction took place in 1954. In **Middlesbrough** the rate rose to a high level in 1948 (more than twice the national rate) and barely declined until 1954, when it fell sharply. In 1955 the rate was only 34 per cent above the rate for England and Wales. In **Newcastle upon Tyne**, which has experienced higher than average tuberculosis mortality, the rate reached its highest level in 1945-48 when it was twice as high as in England and Wales as a whole. Since then the rate at first declined, then remained almost stationary from 1949 to 1953, and though now declining is still about 70 per cent above the rate for England and Wales. **Nottingham** had a series of high rates from 1943 to 1953, and though the rates were lower in 1954 and again in 1955, they remained higher than in 1938-41. In **Oxford** in 1954 and 1955 the rates were higher than they had been during the previous four years and considerably higher than during 1938-45. The rate for **Salford** in 1955 was just over half what it was in 1938-39. In contrast to pre-war experience **Smethwick** since 1945 has had rates twice as large as those for England and Wales. In **South Shields** the rate in almost every year since 1940 has been twice as large as the national rate. In **Southampton** rates in 1953 and 1955 were higher than in any previous year except 1948. In striking contrast were the rates in 1954-55 for **Southend-on-Sea** which were less than half of those for 1938-39, and about a quarter of those for 1941-42. **Stockport** had its highest rate in 1955 after a long period of rates well below the national figure. **Walsall**, an area of high tuberculosis mortality, had rates not very different from those for England and Wales from 1938 to 1947, but in 1948 the rate rose to a little more than 30 per cent above the national figure and reached a peak in 1952 at more than twice the rate for the country as a whole. In 1954 there was a sharp decline and in the two years 1954-55 the excess above England and Wales was only 27 per cent. In **Wolverhampton** the rate has fluctuated but has not often deviated widely from the national rate and its trend. In **Tynemouth** (where mortality from respiratory tuberculosis has been high) the notification rate suffered substantial upward fluctuations in 1943-44, 1947 and 1951-52 since when, though generally above the national level, it has consistently declined.

Trend in the Administrative Counties

The administrative counties, listed in Table 10, comprise all areas in the country except county boroughs and except the Administrative County of London, which has already been discussed. In their aggregate these administrative counties contained, in 1955, approximately 27 million persons of whom about 60 per cent lived in small or medium sized towns, the remainder in rural districts.

The notification rate in the total administrative counties rose during the war years, but it was a fairly small rise, from 70 in 1939 to a peak of 86 in 1944. Thereafter followed a series of steady annual rates of between 85 and 80, declining to 78 in 1953, to 70 in 1954 and to 63 in 1955. The trend was therefore not unlike that for the country as a whole. The rate in 1954 had returned to the level of 1939, and the rate in 1955, the lowest that had been recorded, was 10 per cent less than in 1939.

The rates in **Bedfordshire** remained at a relatively low level throughout the war years but rose to a much higher level between 1948 and 1952, and a similar trend wae recorded in several other counties, e.g. **Buckinghamshire** and **Cambridge**. In **Cumberland** rates have tended to rise from about 1949 onwards, and, in contrast with everywhere else, reached their recorded *maximum* in 1955. Until 1946 the rates for **Durham** were below those for England and Wales but since that year they have kept close to the national level. The rates in **Devon** were low during 1952-55, only 52 per cent of the average for 1938-39. **Kent** and **Lancashire** are two of the largest administrative counties. They lie almost at opposite corners of the country, and their trends were quite different. In Kent there was a large wartime increase in notifications reaching a peak in 1944, followed by a series of more or less steady rates; there was a decline to about the pre-war level in 1954 and a further improvement in 1955. In Lancashire administrative county there was very little of a wartime increase but a tendency towards higher rates between 1949 and 1953, followed by the usual reduction in 1954 and 1955. The trend of notifications in **Middlesex** was similar to that for London, but there were some differences. High rates were recorded between 1941 and 1944 as in London, but in Middlesex they continued at this wartime level up to 1949. Since then improvement has been more or less continuous. **Northumberland** had a sudden short lived rise in notifications in 1955, and a slower rise and fall between 1948 and 1953. Since then there has been no further improvement. **Warwickshire** had a series of high rates throughout the period from 1945 to 1954. The rate in 1955 was lower than for several years, but still considerably above those for 1938-40. The **Yorkshire Ridings** have had consistently lower than average rates; there was some tendency for rates to rise at the end of the war but the rates are now back to the 1938-39 level. **Cardiganshire** had a series of three annual rates of 22, 20, 22 in 1949-51, contrasting with rates of 130 in 1938 and 69 in 1955. In **Merionethshire** there were no indications in 1954 and 1955 of any tendency for the rates to decline; despite fluctuation due to small numbers a rising trend is discernible. In the majority of the other Welsh counties, though the rates fluctuate from year to year, the tendency towards the end of the period was for some improvement to have taken place compared with earlier years.

TABLE 10. - Tuberculosis of respiratory system: Notification rates per 100,000 population, England and Wales, Metropolitan Boroughs, County Boroughs and Administrative Counties, 1938-1955

Area	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
England and Wales	92	84	86	95	97	100	103	99	99	100	101	102	96	97	95	93	84	76
London Administrative County	128	123	134	183	180	181	183	168	154	181	161	168	152	146	140	140	127	114
City of London	229	110	176	120	275	218	313	223	169	360	189	224	285	281	172	393	251	116
Metropolitan Boroughs:																		
Battersea	136	116	138	155	187	203	185	178	147	118	159	146	112	130	147	132	112	101
Bermondsey	115	104	129	223	205	215	221	240	218	164	170	196	173	147	99	121	108	93
Bethnal Green	121	108	109	165	171	159	203	173	137	166	171	145	132	141	124	113	115	84
Camberwell	132	118	113	165	181	157	179	149	183	180	198	238	159	152	208	159	185	169
Chelsea	123	147	121	200	160	212	109	175	131	156	144	123	142	112	159	192	104	77
Deptford	139	133	156	191	236	209	169	182	141	138	122	244	310	241	177	196	211	224
Finsbury	130	129	143	283	225	222	203	211	163	158	200	249	198	196	190	177	152	118
Fulham	149	149	139	185	198	189	170	187	180	182	160	195	167	140	156	131	94	84
Greenwich	131	103	130	153	181	139	156	142	128	147	131	130	131	135	107	91	99	99
Hackney	108	109	112	146	170	150	156	141	133	138	140	140	120	95	98	100	79	68
Hammersmith	124	141	139	175	173	172	192	193	180	160	140	160	138	163	151	168	143	117
Hampstead	84	81	115	105	169	161	135	126	106	89	90	107	96	99	106	105	98	88
Holborn	183	189	163	249	242	265	203	168	247	188	152	183	149	184	192	202	137	177
Islington	156	146	148	187	183	186	207	198	153	178	185	189	177	154	174	185	164	133
Kensington	86	107	132	195	153	143	165	129	118	135	132	132	139	119	131	136	128	114
Lambeth	146	131	135	178	181	175	189	179	147	147	148	188	171	173	140	139	156	103
Lewisham	115	111	106	164	180	174	174	180	184	198	203	144	156	117	117	136	102	114
Paddington	149	149	164	221	213	226	223	201	202	209	232	230	194	185	193	200	158	145
Poplar	108	116	126	211	164	210	185	178	169	150	178	178	99	113	125	115	86	83
St. Marylebone	116	112	152	161	198	196	166	137	130	127	97	109	105	101	105	106	72	102

St. Pancras	130	139	156	191	168	188	220	176	164	160	166	162	168	179	163	156	137	154
Shoreditch	119	100	156	248	162	207	189	156	175	151	158	126	134	149	122	120	94	79
Southwark	168	177	187	271	257	247	245	221	197	210	204	187	182	142	168	162	159	154
Stepney	134	127	148	236	223	244	188	219	171	198	171	155	158	175	138	169	163	152
Stoke Newington	87	81	87	154	109	151	157	118	150	149	156	127	128	87	91	111	82	63
Wandsworth	108	97	108	156	146	143	186	119	122	132	142	148	134	143	115	111	106	92
Westminster	138	130	151	193	209	211	212	206	161	204	164	171	148	178	137	147	125	112
Woolwich	135	137	150	203	179	196	172	172	151	186	136	155	125	158	114	94	124	95
County Boroughs:																		
Barnsley	91	79	94	83	109	121	107	78	103	103	199	75	142	152	90	80	72	95
Barrow-in-Furness	103	85	79	92	76	81	81	71	119	95	84	91	116	104	78	69	110	67
Bath	73	88	69	94	73	92	94	89	123	99	94	96	74	101	63	84	53	67
Birkenhead	124	121	102	140	159	161	138	163	140	128	130	160	151	126	148	133	102	97
Birmingham	97	83	86	91	102	102	107	107	104	110	101	101	100	107	111	111	99	102
Blackburn	81	73	75	72	93	76	63	71	78	86	62	47	49	74	80	95	82	71
Blackpool	72	74	87	89	79	70	71	89	89	86	104	63	59	71	75	75	65	54
Bolton	57	50	58	68	54	61	79	58	57	69	77	61	50	74	68	51	48	47
Bootle	136	159	158	159	234	243	179	189	210	162	163	207	204	198	216	181	168	114
Bournemouth	97	75	100	80	72	83	90	99	79	89	84	77	56	91	102	70	96	63
Bradford	67	74	57	58	67	63	52	56	58	61	70	93	83	79	90	106	88	89
Brighton	98	89	89	106	106	111	89	100	106	93	110	87	114	140	116	128	109	77
Bristol	108	85	88	106	120	133	113	104	112	103	108	107	95	114	108	95	87	78
Burnley	78	69	90	88	99	83	84	70	107	88	108	76	79	70	82	71	100	70
Burton upon Trent	58	78	78	77	76	105	97	100	82	102	131	160	97	47	72	76	78	96
Bury	69	53	54	50	42	80	84	53	50	72	61	62	60	77	43	46	39	38
Canterbury	96	72	123	90	133	82	110	112	85	87	63	87	79	67	57	71	74	64
Carlisle	91	51	79	85	118	93	127	109	136	124	103	97	123	137	134	98	131	103
Chester	79	93	81	69	82	83	87	111	113	90	97	106	99	101	109	137	100	89
Coventry	101	105	103	112	101	130	122	133	103	127	124	131	113	119	145	136	135	132

TABLE 10 *(Contd.)*

Area	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Croydon	88	79	71	81	92	108	104	118	97	93	100	82	97	73	89	76	84	81
Darlington	132	85	97	93	128	141	89	88	99	74	84	63	84	98	114	99	101	70
Derby	73	77	90	84	75	103	80	84	73	124	97	114	113	88	93	84	103	85
Dewsbury	98	61	85	72	58	51	51	56	54	58	56	41	45	47	47	62	15	36
Doncaster	70	73	68	84	84	101	104	86	78	87	93	90	74	71	101	109	71	89
Dudley	102	80	101	107	98	109	103	81	124	120	108	106	139	113	112	138	98	97
Eastbourne	86	55	68	105	62	82	105	98	124	63	102	66	68	59	59	70	64	73
East Ham	113	122	105	156	162	189	149	186	160	166	181	120	115	97	84	106	106	93
Exeter	95	109	127	90	87	123	136	96	102	106	101	91	103	122	120	118	108	95
Gateshead	187	159	181	181	188	191	211	199	198	212	204	224	198	206	223	234	176	146
Gloucester	103	91	137	133	140	140	134	145	138	167	155	157	114	127	152	137	96	86
Great Yarmouth	102	87	103	118	130	86	94	97	90	72	79	97	106	72	84	49	54	41
Grimsby	109	99	110	118	133	140	151	155	138	131	115	120	91	135	133	99	93	68
Halifax	101	83	113	101	86	97	73	58	47	65	49	61	70	166	102	110	112	94
Hastings	124	112	92	152	110	99	130	90	135	98	73	62	86	89	62	67	79	107
Huddersfield	71	68	57	48	73	64	80	41	54	47	53	56	65	57	57	58	88	57
Ipswich	88	87	73	66	78	97	105	71	75	72	55	62	94	123	100	52	66	49
Kingston upon Hull	113	99	117	119	145	146	125	133	132	108	118	116	92	91	88	110	109	99
Leeds	103	113	114	118	128	117	125	104	93	93	89	84	93	84	82	76	82	79
Leicester	105	103	111	117	113	114	126	109	133	138	117	116	158	121	130	121	95	73
Lincoln	81	84	86	77	100	107	119	94	86	155	103	97	75	83	88	94	83	61
Liverpool	167	150	166	177	187	200	193	191	192	187	202	199	194	195	198	175	150	141
Manchester	124	120	145	150	136	134	122	131	114	112	123	127	103	102	102	106	96	95
Middlesbrough	121	130	189	114	108	128	99	100	114	145	211	181	181	173	180	203	134	102
Newcastle upon Tyne	153	138	159	159	188	196	168	195	192	185	181	156	158	151	140	156	146	129

Northampton	78	72	80	101	73	85	128	103	110	94	91	91	70	88	99	66	59	80
Norwich	73	80	69	80	59	71	81	73	81	95	84	91	66	86	81	98	58	62
Nottingham	112	95	79	102	121	189	182	211	162	184	198	185	159	174	152	167	139	117
Oldham	101	87	68	72	64	88	80	87	88	83	73	69	69	80	122	66	57	61
Oxford	75	69	76	64	90	72	79	92	102	101	107	132	102	80	69	94	109	104
Plymouth	99	90	93	121	174	157	143	164	154	157	148	141	154	115	105	103	106	106
Portsmouth	132	108	96	179	181	199	213	204	167	145	159	146	130	104	87	103	80	66
Preston	91	84	92	93	109	113	106	95	112	85	86	88	71	82	86	69	67	55
Reading	91	109	109	104	140	146	108	98	130	144	111	111	122	100	111	82	72	111
Rochdale	97	90	90	110	75	80	78	62	74	103	76	131	115	77	100	59	82	66
Rotherham	80	49	54	44	86	59	43	66	46	67	50	46	75	61	67	66	51	68
St. Helens	69	53	89	73	72	96	85	73	92	100	87	84	91	80	91	96	98	64
Salford	147	143	138	138	158	161	141	134	127	113	118	138	98	110	94	121	94	76
Sheffield	167	120	129	123	142	119	129	121	122	119	102	122	114	128	110	101	95	87
Smethwick	98	115	89	107	129	114	156	189	181	212	275	231	228	202	169	196	204	133
Southampton	136	100	76	84	133	137	127	102	163	142	132	85	100	108	121	148	129	153
Southend-on-Sea	101	93	86	162	168	129	145	129	106	103	100	107	111	82	75	60	45	44
Southport	64	45	42	55	73	50	67	76	64	72	58	69	43	55	61	62	59	49
South Shields	134	136	197	194	180	197	208	169	207	154	183	170	150	193	215	221	164	165
Stockport	89	65	59	72	67	53	61	57	65	57	84	68	45	57	59	70	64	91
Stoke-on-Trent	138	100	106	107	93	94	103	100	107	115	94	151	92	103	115	109	108	123
Sunderland	99	87	97	104	88	116	100	110	112	130	152	151	117	154	148	115	118	114
Tynemouth	105	105	117	106	109	130	128	90	81	130	114	100	113	137	183	112	106	78
Wakefield	71	63	56	61	65	81	81	89	43	59	86	70	29	59	42	67	70	52
Wallasey	92	78	74	87	125	117	72	89	76	126	125	127	108	92	108	84	80	75

TABLE 10 *(Contd.)*

Area	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Walsall	78	86	91	93	97	116	118	118	100	98	133	134	106	147	216	178	96	107
Warrington	109	80	83	87	81	82	104	79	65	71	110	64	64	88	94	112	89	78
West Bromwich	87	91	117	120	159	174	178	173	173	129	156	194	128	143	141	127	135	137
West Ham	94	99	102	151	171	163	135	118	104	95	109	98	90	113	78	118	99	86
West Hartlepool	78	100	107	116	118	121	134	104	121	123	158	91	132	95	92	93	92	109
Wigan	88	90	85	69	102	108	92	120	116	101	92	84	85	87	87	80	98	66
Wolverhampton	94	70	66	87	72	102	113	85	79	120	98	95	75	88	114	122	88	77
Worcester	131	92	85	102	102	95	74	78	78	64	74	84	58	93	126	100	110	101
York	62	44	47	47	58	62	59	52	67	83	76	79	62	74	63	43	47	41
Cardiff	143	120	123	136	131	161	145	142	177	140	135	152	123	133	116	133	104	89
Merthyr Tidfil	129	121	128	129	146	110	260	231	169	222	223	189	150	184	161	145	134	94
Newport (Mon.)	160	117	131	121	135	141	193	150	112	123	107	132	116	116	128	87	112	80
Swansea	122	120	103	115	113	123	117	116	116	109	123	109	94	116	92	101	90	86
Total County Boroughs	**110**	**99**	**104**	**110**	**116**	**123**	**120**	**118**	**117**	**117**	**119**	**117**	**110**	**113**	**113**	**110**	**99**	**92**
Administrative Counties:																		
Bedfordshire	103	85	84	72	78	72	83	78	86	86	116	114	127	98	119	104	75	82
Berkshire	64	73	88	74	92	85	110	89	83	94	86	91	72	89	84	76	73	69
Buckinghamshire	37	37	34	34	40	39	45	38	48	71	85	84	81	79	74	64	58	58
Cambridgeshire	43	36	55	83	55	62	54	61	60	63	75	88	80	75	77	77	55	50
Cheshire	72	57	59	62	55	56	62	59	46	58	55	54	58	52	54	52	45	51
Cornwall	81	52	59	64	61	67	61	60	59	55	60	78	71	73	80	88	71	76
Cumberland	100	87	72	86	88	71	80	83	89	77	87	103	106	123	121	132	121	138
Derbyshire	57	48	49	55	56	55	56	53	51	49	53	63	56	63	69	58	54	40
Devon	93	106	91	86	89	89	85	84	84	51	60	80	66	62	47	59	53	49
Dorset	58	57	57	67	77	66	77	57	60	78	59	60	65	76	60	54	48	45
Durham	73	79	72	77	78	82	87	81	106	103	115	100	115	117	102	97	87	74
Ely, Isle of	45	43	46	64	77	40	46	50	64	32	56	47	59	66	85	84	50	55
Essex	87	76	79	95	99	100	94	89	97	95	91	86	86	84	92	72	62	49
Gloucestershire	71	58	52	55	49	55	82	78	83	100	82	90	88	83	78	70	71	71
Herefordshire	58	70	68	66	67	96	95	91	93	98	99	79	83	110	78	71	64	64

Hertfordshire	71	62	57	74	73	75	97	88	89	86	87	71	70	81	78	79	76	63
Huntingdonshire	65	57	63	54	70	59	84	51	72	72	66	58	63	54	69	64	87	41
Kent	79	78	73	101	105	102	116	88	93	98	100	111	98	90	97	82	74	69
Lancashire	66	68	68	71	71	72	74	74	74	64	70	75	68	83	79	74	70	56
Leicestershire	61	56	59	61	67	52	45	63	55	87	54	69	62	71	66	57	52	53
Lincolnshire:																		
Parts of Holland	46	50	49	38	55	51	66	71	60	48	73	54	48	60	58	42	38	35
Parts of Kesteven	39	50	144	54	52	56	52	60	46	43	49	89	91	73	65	86	71	52
Parts of Lindsey	81	88	83	50	62	68	66	83	82	85	76	55	57	55	58	50	48	45
Middlesex	95	91	96	116	120	120	119	112	113	117	122	119	107	106	97	100	85	76
Norfolk	51	59	54	71	56	55	82	65	64	68	58	52	71	61	64	46	44	41
Northamptonshire	67	61	60	76	62	75	79	81	92	65	64	62	52	53	51	53	69	49
Northumberland	82	70	80	79	68	92	99	127	85	79	79	95	98	104	103	87	90	87
Nottinghamshire	79	66	75	83	75	70	73	62	65	75	81	69	75	70	69	77	68	59
Oxfordshire	58	51	61	74	70	77	104	78	80	77	74	75	89	66	65	65	65	62
Peterborough, Soke of	52	37	39	44	80	63	62	72	81	82	46	65	112	91	118	83	117	50
Rutland	56	38	15	33	29	62	49	67	27	46	40	25	70	55	53	75	26	45
Shropshire	53	46	45	63	60	62	53	57	52	60	50	43	52	36	38	42	44	51
Somerset	71	74	92	98	90	90	102	106	99	121	100	81	80	80	79	74	65	61
Southampton	54	53	67	63	61	64	68	75	78	84	72	72	74	77	69	79	84	54
Staffordshire	81	72	64	73	78	74	73	71	76	81	86	84	82	91	83	100	81	70
Suffolk, East	44	41	53	84	46	59	54	48	65	55	56	58	55	79	50	45	41	39
Suffolk, West	69	57	36	58	56	57	52	70	54	70	77	60	81	69	48	37	45	31
Surrey	68	68	74	82	84	87	95	86	79	89	78	84	84	83	89	72	62	54
Sussex, East	88	55	60	80	81	93	82	92	88	70	75	69	66	76	74	72	66	52
Sussex, West	67	47	58	65	60	51	56	47	54	54	70	69	58	57	71	45	45	38
Warwickshire	62	56	68	85	69	72	90	97	84	88	94	90	83	85	95	96	95	83
Westmorland	68	47	57	60	59	59	36	57	47	58	50	45	44	66	53	59	42	47
Wight, Isle of	88	65	56	47	82	101	94	79	68	78	43	74	61	65	82	48	63	49
Wiltshire	51	52	54	53	59	72	85	74	73	80	85	89	80	80	64	84	56	54
Worcestershire	87	68	74	72	66	75	66	63	73	68	74	86	82	83	67	67	80	74

TABLE 10 (*Contd.*)

Area	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Yorkshire, East Riding	50	54	46	61	68	46	57	71	68	63	49	56	48	50	53	47	57	47
Yorkshire, North Riding	56	38	35	37	44	47	59	47	50	56	68	59	62	66	50	61	53	44
Yorkshire, West Riding	65	62	60	68	67	65	64	64	67	71	71	88	76	78	81	74	66	62
Anglesey	131	96	130	118	111	95	138	107	110	124	127	110	110	131	112	106	101	107
Brecknockshire	49	94	80	90	64	86	87	82	109	74	106	113	106	99	64	75	83	79
Caernarvonshire	148	134	160	146	151	96	141	127	118	154	150	128	165	161	133	141	125	107
Cardiganshire	130	95	41	87	83	64	55	48	37	56	48	22	20	22	68	90	82	69
Carmarthenshire	102	102	102	86	76	110	140	117	116	116	85	109	111	96	105	114	95	98
Denbighshire	108	104	115	100	88	105	110	109	117	106	91	120	93	93	114	116	120	100
Flintshire	87	96	99	90	96	91	130	97	120	88	105	103	84	73	82	114	88	86
Glamorganshire	117	118	122	117	119	127	150	130	120	123	124	124	124	113	114	130	103	97
Merionethshire	193	112	158	127	164	158	229	134	197	162	120	117	147	130	146	132	132	162
Monmouthshire	101	112	92	104	103	119	119	99	111	96	119	117	105	114	109	91	90	83
Montgomeryshire	94	50	74	92	53	118	78	98	95	125	106	101	56	61	75	78	82	60
Pembrokeshire	127	90	64	64	102	97	108	114	94	92	78	65	49	75	56	66	66	38
Radnorshire	51	45	37	25	12	59	65	73	35	54	39	39	82	60	35	46	62	57
Total Administrative Counties	**75**	**70**	**71**	**79**	**79**	**81**	**86**	**81**	**82**	**84**	**84**	**85**	**83**	**83**	**81**	**78**	**70**	**63**

GEOGRAPHICAL DISTRIBUTION OF RESPIRATORY TUBERCULOSIS NOTIFICATIONS, 1954-55

The pattern of notification of respiratory tuberculosis in 1954-55, by sex and age, is set out in detail in Table 11 for England and Wales as a whole, and for each of the standard regions, metropolitan boroughs, county boroughs and administrative counties.

For the country as a whole the average notification rates for 1954-55 were males, 96 per 100,000, and females, 84 per 100,000. At ages under 15 the rates were practically equal in each sex, viz., 38 and 39 per 100,000. The rates increased sharply at ages 15-24, the age-group of maximum incidence, but the rate was appreciably higher for young women than young men. After the age of 25 the rates for women declined rapidly, reaching a low level at ages 65 and over. In men, on the other hand, there was a small reduction at ages 25-44, followed by a rise again at ages 45-64, the rate being almost as high as at 15-24. After age 65 there was a considerable falling off in notifications, but the rate for men was five times that of women.

Regional variations

The broad geographical pattern of notifications in 1954-55 was one of high rates (persons - all ages) in the Northern (98), Midland (92), London and South Eastern (85) regions, and Wales (95); very low rates in the Eastern region (55), and rates somewhat below average elsewhere. There was little difference between the south east portion of Wales (96) and the remainder of Wales (95).

In each region the sex-age distribution of notifications was broadly similar to that for the country as a whole. In the London and South Eastern region, and in Wales, the two regions with highest rates for males of all ages, there was a large excess over the national average for males at ages 15-24 and 65 and over, with a much smaller excess at intermediate ages. For women none of the London and South Eastern rates were particularly high but the Northern region and Wales had high rates at ages up to 44, and the Welsh region also at 65 and over.

The Metropolitan Boroughs

Compared with national rates in 1954-55 of 98 for males and 64 for females, the rates for the administrative county of London were 152 for males and 93 for females. Metropolitan boroughs with notably high rates (persons - all ages) were **Camberwell** (177), **Deptford** (218), **Holborn** (157), **Islington** (149), **Paddington** (152), **St. Pancras** (146), **Southwark** (158), and **Stepney** (158). Boroughs with low rates were **Chelsea** (91), **Fulham** (90), **Hackney** (73), **Poplar** (85), **St. Marylebone** (87), **Shoreditch** (88) and **Stoke Newington** (73).

For the total administrative county of London the notable feature of the sex-age distribution was the relatively high ratee for men aged 65 and over. The rates for this group, 170 per 100,000, exceeded that for males of all ages, 152 per 100,000, whereas for England and Wales as a whole the rate for men aged 65 and over, 82 per 100,000, was lower than the rate at all ages, 96 per 100,000. Among metropolitan boroughs contributing particularly to this relatively high rate amongst elderly males were **Deptford, Finsbury, Southwark**, and **Stepney**. In contrast with fairly wide fluctuations from age to age amongst adult males in the majority of the metropolitan boroughs **Islington** recorded practically equal rates in each of the four adult age-groups. In **Holborn** the notification rate for boys under 15, 152 per 100,000, exceeded that for ages 15-24, and contrasted with a rate of 9 per 100,000 in **Stoke Newington** and ratee under 20 in several other metropolitan boroughs. For girls under 15 the rate in **Holborn** was, on the other hand, just below the national average.

High rates for girls under 15 were recorded in **Finsbury** (101), and **Kensington** (110), and at ages 15-24 in **Camberwell** (254), **Deptford** (294), **Hammersmith** (253), **Islington** (274), **Lambeth** (264), **Lewisham** (299), **Southwark** (336), and **Stoke Newington** (274). **Deptford** had a high rate for femalee at 25-44 (218) and 45-64 (135), and the **City** at 65 and over (172).

The County Boroughs

The county boroughs reporting the highest notification rates (persons, all ages) in 1954-55 were **Smethwick** (169), **South Shields** (164), and **Gateshead** (162). Following not far behind came **Liverpool** (146), **Bootle** (140), and **Southampton** (142). The lowest notification rate in 1954-55 was in **Dewsbury** (25), followed by **Bury** (39), **York** (44), **Southend-on-Sea** (44), and **Bolton** and **Great Yarmouth** (47).

In the majority of the county boroughs the distribution of notifications by sex and ages broadly followed the national pattern. There were numerous exceptions, however, but some of these were no doubt due to chance fluctuations in small numbere, particularly in the smaller boroughs. **Barrow-in-Furness** had very low rates for women aged 45-64 (6 per 100,000) and 65 and over (13 per 100,000) contrasting with a rate of 226 at 15-24. Two towns, **Bury** and **Dewsbury** had rates below 10, both for boys and girls, whereas **Smethwick** had childhood rates of nearly 200 in each sex and **Gateshead** and **South Shields** rates of over 100. In **Bootle** low rates for boys and girls under 15 years gave place to rates at 15-24 that were about double the national average.

Other county boroughs with notably high rates at 15-24 (over 250 per 100,000 in either sex) were **Brighton** (M. 282), **Burnley** (F. 339), **Carlisle** (F. 285), **Coventry** (M. 283, F. 270), **Gateshead**

(M.330), F.327), **Hastings** (F.261), **Liverpool** (F.273), **Newcastle upon Tyne** (M.251, F.336), **Nottingham** (F.273), **Oxford** (M.299), **Smethwick** (M.268), **Southampton** (F.257), **South Shields** (M.402, F.289), **Stockport** (F.260), **Sunderland** (F.305), **Wigan** (M.256), and **Merthyr Tydfil** (M.251, F.279). Almost without exception the striking increase of notifications of men compared with women at ages 45 and over was repeated in the individual county boroughs, some of the sex differences being very large, for example in **West Bromwich** which had rates at 45-64 and 65 and over of 279 and 192 for men and 35 and 12 for women. In several boroughs no cases were notified at all in women over 65.

The Administrative Counties

The administrative counties with highest notification rates in 1954-55 were **Merionethshire** (147 per 100,000), **Cumberland** (129), **Caernarvonshire** (116), **Denbighshire** (110), and **Anglesey** (104). After **Cumberland**, the two English counties with highest rates were **Warwickshire** and **Northumberland**, with 69 and 66 respectively. Notification rates of less than half of these were recorded in **Rutland** (36), **Lincolnshire, Holland** (37) and **Suffolk, West** (38), and these were followed closely by **Suffolk, East** (40), **Westmorland** (40), and **Sussex, West** (41). **Pembrokeshire** (51) and **Radnorshire** (59) had rates just below the county average for England and Wales as a whole.

Though subject to minor fluctuations and variations the sex-age distribution of notification rates in the majority of the individual administrative counties corresponded closely with the national pattern. In **Cumberland**, however, the rate for young women aged 15-24 was three times the corresponding rate for men, and the rates for older men were double those at ages under 45. In **Middlesex**, with a total rate two thirds that of the County of London, the rate for men aged 45-64 was just below the national average and little more than half the corresponding rate for London. At 65 and over the rate for men was well above average, but still considerably lower than the London rate. In contrast the other home counties all had fairly low rates for elderly men.

Amongst the Welsh counties which had high total rates there was a striking difference between the age distribution for males in **Merionethshire** and in the others. In Merionethshire the notification rate for males aged 15-24 (66 per 100,000) was below average, whereas at ages 45-64 and 65 and over the rates were some three times those of England and Wales. In none of the other Welsh counties did the notification rates suggest such an exceptional incidence of tuberculosis amongst elderly males, though rates at ages 65 and over in males were notably high in **Caernarvonshire**, **Denbighshire**, **Flintshire** and **Montgomeryshire**.

TABLE 11. – Tuberculosis of respiratory system: mean annual notification rates per 100,000 population, by sex and age, England and Wales, Standard Regions, Metropolitan Boroughs, County Boroughs and Administrative Counties, 1954–55

Area	Males						Females						Persons All Ages
	0–	15–	25–	45–	65 and over	All Ages	0–	15–	25–	45–	65 and over	All Ages	
England and Wales	38	134	109	123	82	96	39	171	90	30	17	64	80
Standard regions:													
Northern	49	168	111	146	76	**108**	52	233	113	36	19	**85**	**96**
East and West Ridings	38	121	98	128	74	**92**	39	149	81	23	16	**57**	**74**
North Western	40	131	105	126	81	**95**	43	181	86	26	11	**63**	**78**
North Midland	37	118	90	94	60	**79**	38	145	72	26	13	**55**	**66**
Midland	56	154	121	146	75	**111**	53	186	90	38	17	**71**	**92**
Eastern	23	92	87	76	47	**66**	25	113	68	24	14	**45**	**55**
London and South Eastern	32	160	123	134	109	**108**	33	176	93	33	20	**66**	**85**
Southern	24	89	110	117	65	**84**	28	134	92	31	18	**57**	**70**
South Western	31	103	102	99	67	**81**	36	158	90	26	17	**59**	**70**
Wales (including Monmouthshire)	47	170	120	128	109	**109**	48	217	118	33	25	**82**	**95**
Wales I (South East)	47	181	120	124	101	**109**	44	227	119	32	20	**83**	**96**
Wales II (Remainder)	47	144	120	138	127	**111**	59	190	114	35	38	**80**	**95**

London Administrative County	50	190	156	213	170	**152**	51	216	127	48	34	**93**	**121**
City of London	-	-	*375*	*350*	*357*	*291*	-	-	*128*	*56*	*172*	*77*	*183*
Metropolitan Boroughs:													
Battersea	*67*	181	116	193	*61*	**124**	*70*	187	129	*53*	*18*	**92**	**107**
Bermondsey	*46*	*105*	122	242	*147*	**130**	*40*	*211*	*97*	*22*	-	**73**	**101**
Bethnal Green	*60*	*131*	*75*	247	*108*	**120**	*26*	*152*	118	*52*	*70*	**83**	**101**
Camberwell	73	280	244	393	168	**233**	*75*	254	159	102	*64*	**128**	**177**
Chelsea	*12*	*318*	*100*	*72*	*183*	**109**	*37*	*146*	104	*52*	*44*	**78**	**91**
Deptford	*103*	399	245	433	415	**286**	*55*	294	218	135	*72*	**155**	**218**
Finsbury	*69*	*181*	*125*	320	*325*	**184**	*101*	*143*	*121*	*33*	*43*	**90**	**135**
Fulham	*51*	197	91	163	*106*	**112**	*22*	182	101	*34*	*34*	**70**	**90**
Greenwich	*28*	*142*	147	134	*55*	**107**	*39*	190	148	*48*	*19*	**92**	**99**
Hackney	*17*	*94*	108	131	158	**96**	*18*	114	75	*38*	*5*	**52**	**73**
Hammersmith	*38*	153	182	224	*187*	**158**	*43*	253	149	*52*	*41*	**106**	**131**
Hampstead	*48*	*143*	157	123	*65*	**120**	*50*	194	89	*26*	*32*	**72**	**92**
Holborn	*152*	*148*	*188*	357	*149*	**218**	*34*	*186*	*190*	*29*	-	**107**	**157**
Islington	64	223	226	223	213	**188**	*39*	274	172	54	*38*	**115**	**149**
Kensington	*75*	157	156	182	*140*	**147**	110	189	*129*	*38*	*54*	**101**	**121**
Lambeth	46	*147*	*173*	246	*173*	**158**	53	264	154	*34*	*30*	**104**	**130**
Lewisham	*26*	180	118	158	193	**119**	*40*	299	122	53	*24*	**98**	**108**
Paddington	*78*	298	207	238	220	**202**	*76*	204	170	*42*	*24*	**110**	**152**
Poplar	*24*	*76*	116	238	*70*	**110**	*37*	*157*	*61*	*44*	*12*	**61**	**85**
St. Marylebone	*70*	*147*	133	161	*99*	**130**	-	*116*	98	*26*	*8*	**56**	**87**

TABLE 11. - *continued*

Area	Males						Females						Persons
	0-	15-	25-	45-	65 and over	All Ages	0-	15-	25-	45-	65 and over	All Ages	All Ages
St. Pancras	*45*	344	192	246	209	198	*69*	236	111	*42*	*62*	98	146
Shoreditch	*36*	*82*	*113*	*191*	*103*	104	*49*	*122*	*82*	*48*	*50*	70	86
Southwark	*77*	*159*	150	322	389	191	98	336	123	*53*	*67*	126	158
Stepney	95	277	196	294	286	215	*83*	191	151	*27*	*28*	102	158
Stoke Newington	*9*	*94*	*74*	*155*	*130*	83	*9*	*274*	*61*	*16*	*49*	64	73
Wandsworth	34	170	132	149	122	118	50	226	108	49	*20*	82	99
Westminster	*17*	241	126	206	*190*	156	*35*	208	133	*25*	*30*	87	119
Woolwich	*46*	181	150	187	*137*	138	*42*	166	121	59	*21*	82	110
County Boroughs:													
Barnsley	*47*	*71*	112	*115*	*117*	91	*33*	*155*	121	*41*	*14*	76	84
Barrow-in-Furness	*51*	*136*	*98*	145	*129*	105	*79*	*226*	*83*	*6*	*13*	72	89
Bath	*19*	119	106	*82*	*113*	82	*6*	*92*	*70*	*35*	*7*	41	60
Birkenhead	56	196	121	180	*62*	122	*44*	199	103	*47*	*17*	79	100
Birmingham	73	199	119	170	81	125	71	185	87	39	22	78	101
Blackburn	*18*	*117*	132	153	*72*	104	*24*	154	83	*24*	*6*	52	76
Blackpool	*49*	68	65	96	*84*	74	*51*	116	68	*23*	*18*	48	59
Bolton	*17*	58	82	86	*83*	59	*15*	*90*	61	*17*	*9*	*36*	47
Bootle	*14*	236	152	313	*225*	161	*9*	348	161	*82*	-	119	140
Bournemouth	*24*	186	168	164	*88*	126	*21*	*111*	112	49	*34*	63	89

Bradford	29	176	147	162	84	121	51	174	80	21	7	60	88
Brighton	38	282	128	146	107	126	33	198	73	54	23	66	93
Bristol	41	149	105	134	85	100	32	192	102	19	21	67	83
Burnley	41	167	77	64	96	77	54	339	114	36	8	92	85
Burton upon Trent	18	179	104	142	109	102	36	218	100	24	16	73	87
Bury	8	103	48	72	-	46	9	99	62	6	-	32	39
Canterbury	29	113	108	129	78	91	15	133	57	41	22	48	69
Carlisle	40	166	105	135	130	108	48	285	201	43	71	126	117
Chester	81	130	95	162	83	111	50	197	126	26	14	81	95
Coventry	75	283	189	198	75	166	87	270	108	42	29	100	133
Croydon	33	139	126	130	127	107	25	150	53	15	11	43	73
Darlington	43	92	144	143	39	104	71	136	107	23	9	70	86
Derby	94	161	137	134	49	122	107	154	61	25	12	68	94
Dewsbury	8	87	52	42	21	40	8	29	19	7	-	13	25
Doncaster	55	162	78	128	57	93	61	225	71	10	-	67	80
Dudley	109	240	92	129	41	120	40	234	94	26	-	76	98
Eastbourne	9	148	137	129	94	101	20	122	55	46	14	45	68
East Ham	23	169	92	224	223	127	28	229	98	45	14	76	101
Exeter	73	165	107	137	159	119	44	228	135	24	33	86	101
Gateshead	116	330	167	251	175	195	119	327	143	51	26	131	162
Gloucester	13	115	107	151	88	95	53	213	132	36	12	87	91
Great Yarmouth	17	173	42	72	56	58	17	76	46	52	-	38	47
Grimsby	34	211	96	129	83	100	39	198	47	46	9	61	80
Halifax	89	97	142	235	111	146	45	151	97	31	34	66	103
Hastings	47	207	118	165	96	118	16	261	106	69	12	74	93

TABLE 11. - *continued*

Area	Males						Females						Persons All Ages
	0-	15-	25-	45-	65 and over	All Ages	0-	15-	25-	45-	65 and over	All Ages	
Huddersfield	*23*	*76*	84	127	*59*	79	*36*	*117*	76	*21*	*5*	48	63
Ipswich	*12*	*90*	67	112	96	69	*17*	142	*51*	*30*	*21*	47	57
Kingston upon Hull	63	159	122	168	108	120	44	240	123	36	*12*	89	104
Leeds	41	113	105	146	104	101	46	123	92	33	*19*	63	80
Leicester	48	154	106	129	*58*	99	56	165	97	30	*21*	71	84
Lincoln	*60*	*55*	102	*100*	*80*	84	*70*	*178*	*57*	*28*	*10*	61	72
Liverpool	71	177	208	269	181	176	79	273	157	56	*22*	119	146
Manchester	55	169	115	168	93	118	59	223	87	32	*10*	76	96
Middlesbrough	78	138	92	241	*74*	124	83	247	152	*43*	*14*	112	118
Newcastle upon Tyne	81	251	183	229	116	166	47	336	129	62	*25*	112	138
Northampton	*13*	*156*	98	122	*87*	89	*9*	151	88	*21*	*13*	52	70
Norwich	*37*	*114*	80	102	*61*	77	*23*	*104*	63	*31*	*6*	44	60
Nottingham	68	222	143	205	180	151	59	273	131	64	*34*	107	128
Oldham	*54*	*115*	73	99	*64*	79	*52*	*88*	*51*	*20*	*6*	42	59
Oxford	*14*	299	152	144	*81*	133	*23*	176	132	*47*	*26*	83	106
Plymouth	63	183	153	107	*94*	122	99	222	99	*32*	*22*	89	106
Portsmouth	*28*	113	95	147	*64*	91	*34*	132	80	*24*	*27*	56	73
Preston	*19*	*80*	105	108	*65*	79	*42*	141	*48*	*12*	*14*	45	61
Reading	*37*	165	149	129	*71*	112	*51*	160	105	*39*	*24*	73	91
Rochdale	*29*	*90*	117	123	*73*	92	*42*	*163*	76	*31*	-	58	74

Rotherham	*15*	*90*	*64*	151	*56*	**74**	*25*	*122*	*57*	*21*	*12*	**45**	**59**
St. Helens	*36*	*98*	91	144	*117*	**92**	30	199	84	*27*	*20*	**70**	**81**
Salford	*41*	195	101	175	*81*	**112**	*43*	128	86	*35*	*5*	**61**	**85**
Sheffield	54	154	111	167	95	**115**	58	193	83	24	*20*	**70**	**91**
Smethwick	199	268	214	350	*110*	**239**	189	*175*	*83*	*68*	*11*	**105**	**169**
Southampton	49	207	218	265	131	**177**	50	257	179	*35*	*34*	**109**	**142**
Southend-on-Sea	*31*	*78*	56	67	*35*	**53**	*23*	120	51	*22*	*3*	**37**	**44**
Southport	*36*	*76*	*80*	*94*	*20*	**67**	*44*	*117*	*69*	*28*	*5*	**45**	**54**
South Shields	104	402	188	292	*153*	**214**	115	289	121	*45*	*68*	**120**	**164**
Stockport	*35*	240	84	103	*41*	**91**	*17*	260	91	*18*	*10*	**66**	**78**
Stoke on Trent	78	99	127	240	229	**143**	48	139	109	97	*40*	**90**	**116**
Sunderland	64	245	112	144	*97*	**124**	89	305	103	*42*	*21*	**109**	**116**
Tynemouth	*60*	*182*	114	204	*104*	**128**	*32*	*154*	*79*	*18*	*26*	**59**	**92**
Wakefield	-	*117*	*77*	168	*9*	**48**	-	*38*	*63*	*37*	*28*	**36**	**44**
Wallasey	*21*	*129*	108	200	*120*	**111**	*39*	*129*	76	*11*	*13*	**50**	**78**
Walsall	*61*	*133*	111	196	*80*	**116**	*60*	238	95	*34*	*33*	**88**	**102**
Warrington	*16*	*148*	102	140	*33*	**90**	*21*	240	99	*36*	-	**77**	**83**
West Bromwich	97	201	146	279	*192*	**171**	97	229	120	*35*	*12*	**101**	**136**
West Ham	*38*	144	87	244	*117*	**116**	*35*	189	91	*21*	*28*	**70**	**93**
West Hartlepool	*42*	*201*	127	181	*69*	**121**	38	161	115	*59*	-	**81**	**100**
Wigan	*20*	258	*42*	167	*103*	**100**	*60*	206	*68*	*14*	*11*	**65**	**82**
Wolverhampton	*47*	155	91	138	*81*	**97**	*46*	216	70	*32*	*12*	**69**	**83**
Worcester	*42*	*169*	155	191	*125*	**135**	*43*	*179*	111	*55*	*11*	**79**	**105**
York	*12*	*37*	*62*	102	*44*	**55**	*13*	*68*	*55*	*7*	*38*	**34**	**44**
Cardiff	59	151	122	144	117	**114**	55	204	110	36	*3*	**81**	**97**

TABLE 11. - *continued*

Area	Males						Females						Persons All Ages
	0-	15-	25-	45-	65 and over	All Ages	0-	15-	25-	45-	65 and over	All Ages	
Merthyr Tydfil	*15*	*251*	127	180	*145*	**130**	*30*	279	147	*38*	*30*	**98**	**114**
Newport (Mon.)	88	185	107	121	*60*	**112**	*63*	243	93	*27*	-	**81**	**96**
Swansea	*30*	187	96	115	*77*	**95**	*23*	240	122	*31*	*16*	**82**	**88**
Administrative Counties:													
Bedfordshire	51	105	103	118	*67*	**92**	37	185	78	27	*38*	**65**	**78**
Berkshire	*19*	87	103	120	73	**82**	34	100	96	36	*20*	**59**	**70**
Buckinghamshire	37	81	78	102	78	**75**	32	109	52	*18*	*10*	**42**	**58**
Cambridgeshire	*13*	154	76	53	*16*	**62**	*22*	133	54	*17*	*15*	**43**	**52**
Cheshire	24	68	69	74	43	**58**	26	106	52	18	*12*	**39**	**48**
Cornwall	52	110	107	106	73	**91**	36	150	71	36	*24*	**57**	**73**
Cumberland	42	110	120	231	199	**132**	51	343	183	70	*8*	**127**	**129**
Derbyshire	31	78	73	66	41	**59**	26	73	49	20	*9*	**35**	**47**
Devon	*16*	77	67	90	53	**61**	28	126	63	17	*14*	**42**	**51**
Dorset	*12*	71	77	60	*36*	**53**	*10*	89	67	35	*6*	**40**	**46**
Durham	39	141	81	127	50	**86**	45	190	94	28	*20*	**74**	**80**
Ely, Isle of	*39*	*66*	*70*	*54*	*11*	**52**	*41*	*110*	81	*19*	*9*	**53**	**52**
Essex	19	112	77	85	48	**66**	27	122	61	18	14	**45**	**55**
Gloucestershire	25	119	105	112	*46*	**84**	23	146	85	40	*18*	**59**	**71**
Herefordshire	*34*	129	*43*	128	*22*	**70**	*21*	128	95	*39*	*11*	**58**	**64**

Hertfordshire	26	126	115	94	77	87	27	135	69	32	*18*	53	69
Huntingdonshire	*36*	*113*	*50*	*91*	*14*	62	*13*	*139*	*65*	*19*	*11*	46	54
Kent	29	131	106	115	82	90	28	142	74	30	19	54	71
Lancashire	36	97	79	106	72	77	37	137	67	21	11	50	63
Leicestershire	*21*	91	66	78	*55*	60	26	115	60	28	*5*	45	52
Lincolnshire:													
Parts of Holland	*28*	*81*	*39*	*32*	*19*	38	*29*	*103*	*37*	*13*	-	35	37
Parts of Kesteven	*23*	*51*	99	90	*38*	65	*35*	184	87	*7*	*6*	57	62
Parts of Lindsey	28	103	53	61	*34*	54	35	93	50	*16*	*8*	39	47
Middlesex	27	160	112	117	109	99	28	166	87	33	20	64	81
Norfolk	24	45	72	51	*28*	47	26	74	56	*21*	*17*	38	42
Northamptonshire	*28*	111	76	86	*43*	67	*29*	150	71	*17*	*19*	51	59
Northumberland	41	193	101	113	49	96	47	228	107	31	*19*	81	88
Nottinghamshire	32	103	85	90	73	75	34	136	65	23	*17*	52	63
Oxfordshire	*32*	80	78	90	*68*	70	*22*	156	75	*33*	*25*	57	64
Peterborough, Soke of	*71*	*165*	116	*122*	*33*	106	*37*	*214*	*66*	*24*	*12*	62	84
Rutland	*20*	*20*	*47*	*45*	-	*30*	*21*	*234*	*34*	-	-	*43*	*36*
Shropshire	*28*	*27*	72	69	*21*	48	37	122	58	*23*	*6*	47	47
Somerset	27	97	87	90	54	71	43	148	82	25	*9*	56	63
Southampton	17	58	91	107	44	66	27	122	74	27	*14*	51	59
Staffordshire	38	112	96	129	52	88	44	162	74	29	*16*	63	75
Suffolk, East	*10*	76	63	64	*56*	52	*6*	*52*	51	*23*	*14*	29	40
Suffolk, West	-	*13*	73	*59*	*43*	41	*27*	*67*	66	14	-	36	38
Surrey	19	124	90	91	65	75	22	127	54	25	11	43	58
Sussex, East	*22*	115	83	98	78	76	*21*	113	68	37	*16*	45	59
Sussex, West	*14*	59	61	68	57	51	30	72	55	*18*	*11*	34	41

TABLE 11. - *continued*

Area	Males						Females						Persons All Ages
	0-	15-	25-	45-	65 and over	All Ages	0-	15-	25-	45-	65 and over	All Ages	
Warwickshire	49	162	139	127	70	112	35	164	94	35	*18*	67	89
Westmorland	*27*	*145*	*62*	*60*	*14*	59	*7*	*69*	*21*	*16*	*19*	*23*	40
Wight, Isle of	*20*	*95*	96	*87*	*51*	70	*5*	*96*	*71*	*42*	*17*	44	56
Wiltshire	*20*	41	84	80	67	59	26	97	83	24	*27*	51	55
Worcestershire	30	141	99	118	72	90	31	201	79	35	*8*	65	77
Yorkshire, East Riding	*29*	86	76	84	*29*	63	*15*	153	52	*16*	*13*	42	52
Yorkshire, North Riding	31	51	72	81	*36*	57	*20*	97	57	*20*	*12*	39	48
Yorkshire, West Riding	33	102	78	118	66	78	35	122	68	20	18	50	64
Anglesey	*131*	*269*	*137*	*133*	*82*	147	*35*	*189*	*93*	*15*	*38*	64	104
Brecknockshire	*40*	*67*	144	*140*	*68*	100	*17*	*70*	*115*	*44*	*44*	62	81
Caernarvonshire	*66*	216	151	184	160	149	100	230	115	*25*	*33*	88	116
Cardiganshire	*28*	*293*	*72*	*87*	*56*	91	*47*	*158*	*88*	*31*	*21*	61	75
Carmarthenshire	*47*	178	132	126	*107*	115	*38*	230	100	*35*	*29*	79	97
Denbighshire	54	125	113	174	154	120	65	272	114	55	*65*	101	110
Flintshire	*39*	108	102	116	146	95	67	129	126	*33*	*31*	78	87
Glamorganshire	46	180	122	131	112	113	47	238	119	32	*25*	88	100
Merionethshire	*76*	*88*	*187*	325	*297*	185	*103*	*311*	*117*	*46*	*63*	108	147
Monmouthshire	41	161	96	123	89	96	45	182	110	34	*29*	77	87
Montgomeryshire	*19*	*134*	*103*	*75*	*172*	89	*10*	*121*	*66*	*61*	*16*	53	71
Pembrokeshire	*9*	*84*	*69*	*76*	*32*	55	*19*	*83*	102	*18*	-	48	51
Radnorshire	*22*	*78*	*125*	*88*	-	*71*	*74*	*43*	*39*	*41*	*36*	*47*	59

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